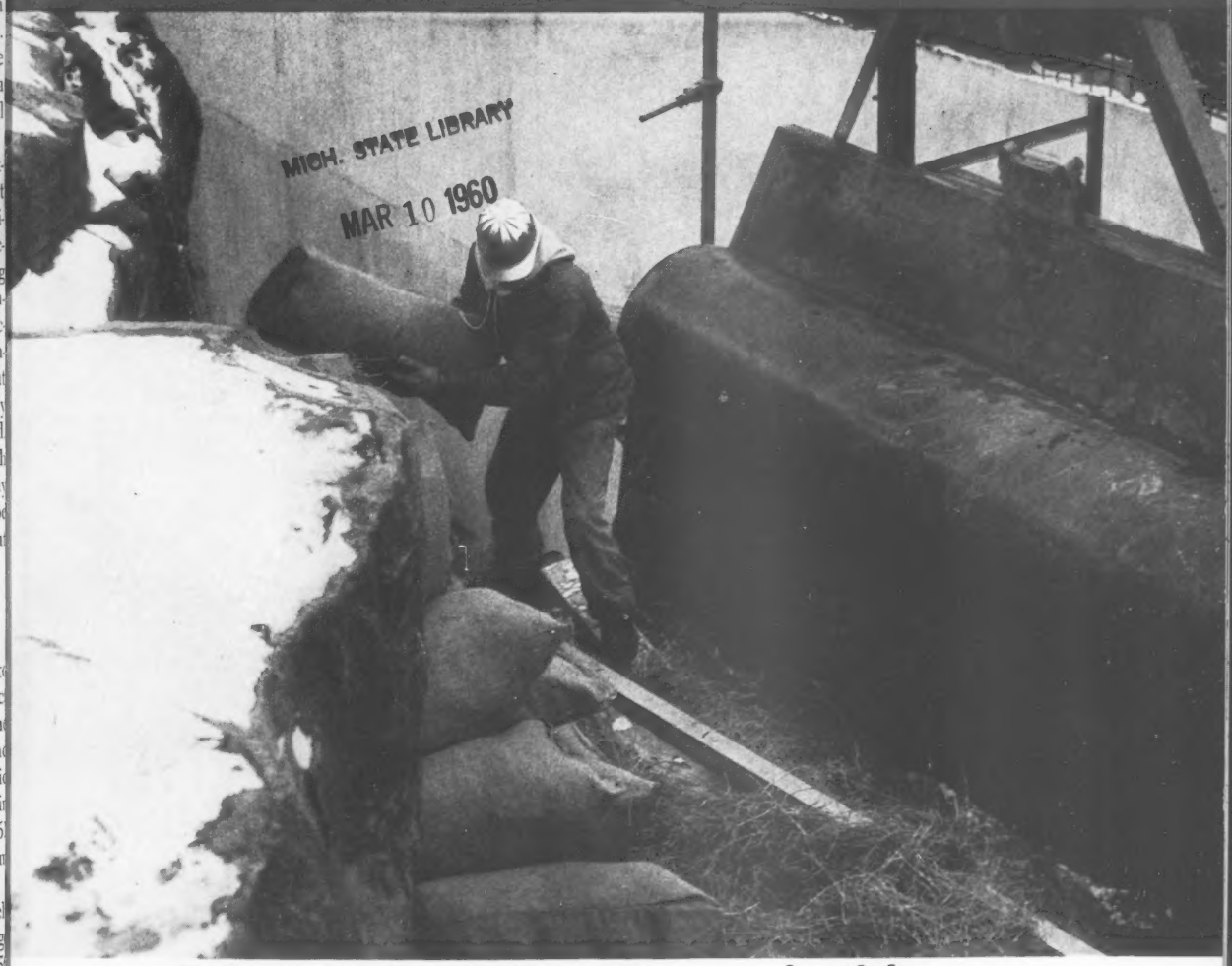
ENGINEERING NEWS-RECORD

MARCH 10, 1960

PRICE 35 CENTS

CONTENTS ON PAGE 17

- Putting a pipeline 19 miles—underwater p.38
- Behind the BMEWS antennas p.45



MICH. STATE LIBRARY
MAR 10 1960

A busy winter for Niagara builders p.30

A McGRAW-HILL PUBLICATION

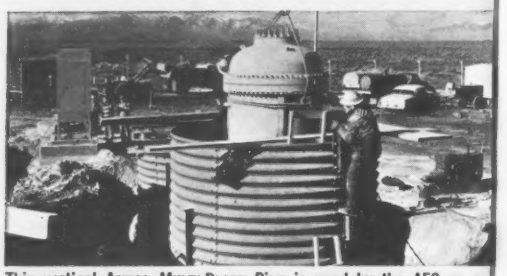
MICH STATE LIBRARY N
LANSING MICH 13 S

New steels are born at Armco

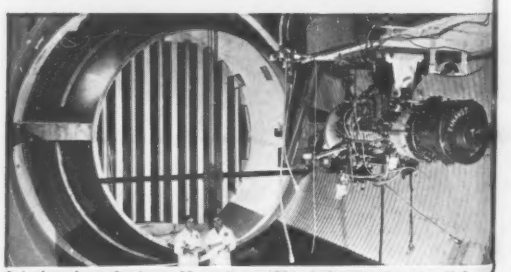
Engineers find Armco MULTI-PLATE Pipe solves unusual problems, too

High on a mountainside, this MULTI-PLATE Pipe collects rainwater for a remote military installation.

Shown here during construction, MULTI-PLATE Pipe will be used as an exit ramp for SAC flight personnel.



This vertical Armco MULTI-PLATE Pipe is used by the AEC as a gallery for an atomic reactor.



Interior view of a large MULTI-PLATE Pipe being used as a cell for the testing of turboprop engines.

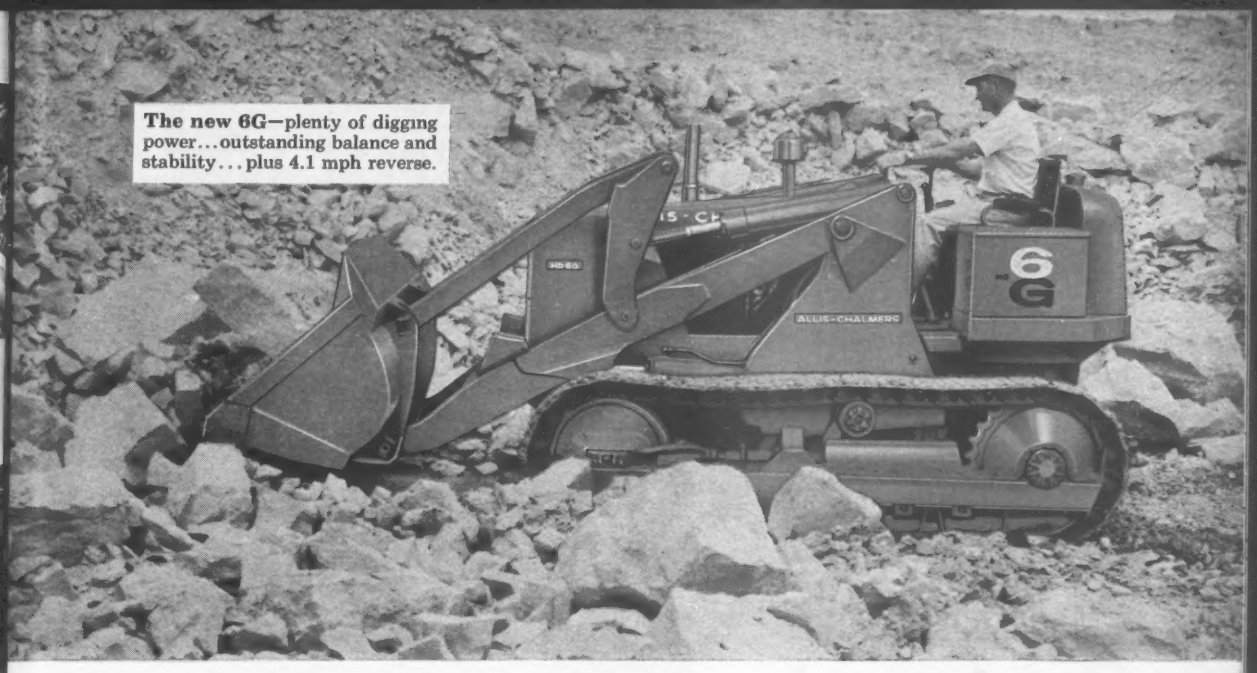
For many years, Armco MULTI-PLATE® Pipe has proved ideal as a drainage structure for highways, railroads, industries and municipalities. But frequently, engineers find these structures offer important design, strength or cost-saving advantages in *unusual* applications, too. Photographs on this page show some of these uses. May we help you determine whether MULTI-PLATE would solve *your* unusual problem?

Galvanized MULTI-PLATE Pipe is supplied in a wide range of diameters and gages. Assembly is by bolting together curved, corrugated metal plates. For engineering and dimensional data, write for catalog. Armco Drainage & Metal Products, Inc., 5480 Curtis Street, Middletown, Ohio.

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation



Your Allis-Chalmers dealer will show you the

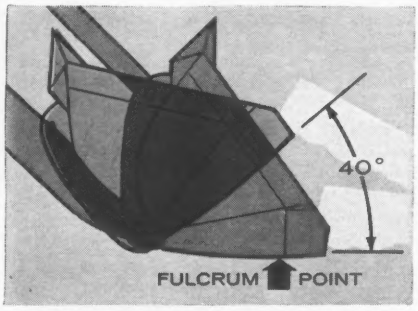
6G's BIG DIFFERENCE

9 ft dump height, long reach, plus many other exclusive advantages make it the finest 1½-yd Tractor-Shovel you can buy.

Shown here are only a few of the important differences found on the 72-hp HD-6G.

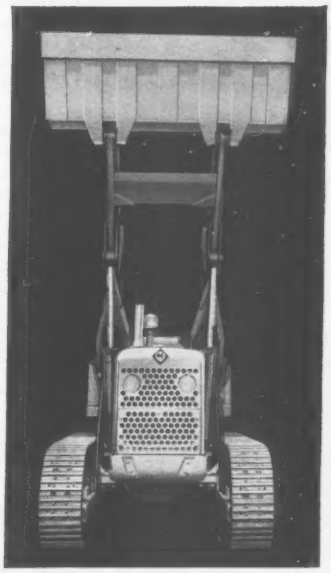
In addition, the 6G is alone in its class with the kind of big-tractor main frame that absorbs shock, adds to dependable, long-life operations. The 6G offers you true unit construction, too . . . allowing quick replacement of clutches, transmission or engine without disturbing adjacent assemblies.

Be sure the "big difference" is on your side—your Allis-Chalmers dealer can give you the details. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



37% more pry-out than any in its class. Exclusive rolling leverage develops over 10½-tons of breakout because the fulcrum point is close in behind the cutting edge.

Permanently lubricated truck wheels, idlers and support rollers—exclusive PERMA-SAFE design with Positive Seals and power-saving tapered roller bearings.

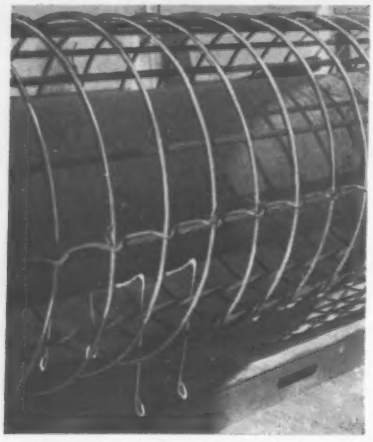


"In-line" booms and linkage. New straight-line design adds solid-steel strength from ground level to more than 9-ft dump height.

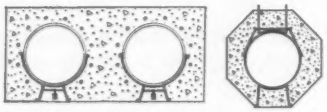
move ahead with ALLIS-CHALMERS

...power for a growing world

PRESTRESSING
Beams & Piles



Made Easier with
Richmond
Chairs & Spacers



Chairs for support and hold-down of Sonovoid tubing in prestressed beams and piles

Spacers for spirals of prestressed piles

The rapidly increasing use of prestressed concrete has created the need for a variety of products in its preparation and application. Richmond, with the know-how gained through 49 years experience in the concrete construction field, has developed a full line of supports, strand deflectors, spacers, lifting inserts, anchors and fasteners designed for fast, safe and economical use.

For more information, about these and other Richmond products for prestressed concrete, send for our free Bulletin No. 11 *—and, if you have any specific concreting problems, ask us about them. Write to:—*

Richmond
SCREW ANCHOR CO., INC.
INSIST ON RICHMOND
... AND BE SURE IT'S RICHMOND

Main Office: 816-838 LIBERTY AVE., BROOKLYN 8, N. Y. Plants & Sales Offices: Atlanta, Georgia • Ft. Worth, Texas • St. Joseph, Missouri • In Canada: ACROW-RICHMOND LTD., Orangeville, Ontario.

ENGINEERING NEWS-RECORD

EIGHTY-SIXTH YEAR OF PUBLICATIO

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York- LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600
Washington - REpublic 7-6630

Editor, Waldo G. Bowman

Managing Editor, **Arthur J. Fox, Jr.**
Senior Editor, **Frederick S. Merritt**

Highways, Airports—Transportation
Leo J. Ritter, Jr., Edward M. Young, Jr., Joseph F. Wilkinson

Buildings, Bridges—Structures
David B. Hill, Marianne Stern Friedland, C. W. Griffin, Jr.

Rivers, Sanitation—Water Resources
James B. Sullivan, William W. Jacobus, Jr.

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Martha Alexander, *Staff Assistant*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Irwin Landau, Nancy Parkes, John C. Greenough, Robert M. Echols

Presentation
Harry W. Jensen, Robert G. Young

Correspondents, Bureaus
Leah Shanks

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra, Marie Moravalk, Elaine Chomyak, Elizabeth Werra, Eleanor Queret
James Webber, Ruth Carlson, *Economics*
William P. Larkin, *Prices, Wages, Indexes*
Evelyn Huber, Charlotte Foster, *Statistics*
Bertha Herrmann, *Unit Prices*

Editorial Research and Indexing
Eva Gierat, Rene Hay
Charlotte Knight, Jane Jacobson

Consulting Editors: **Van Tuyl Boughton, Nathan A. Bowers**

Advertising Sales Manager: **Donald S. Robertson**

Circulation Manager: **Edward F. Bressler**

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan Adams, Glen Bayless, Roy Calvin, Anthony DeLeonardis, John Donaldson, Jay Flocken, Boyd France, Donald Loomis, Gladys Montgomery, Arthur Moore, Seth Payne, Dean Reed, Morton Reichek, Caroline Robertson, Vincent Smith.

Domestic News Bureaus: Atlanta—801 Rhodes-Haverty Bldg., B. E. Barnes, Chief, Frances Ridgway; **Chicago**—520 N. Michigan Ave., Stewart Ramsey, Chief, Violet Porsha; **Dallas**—901 Vaughn Bldg., Marvin Reid, Chief, Lorraine Smith; **Detroit**—856 Penobscot Bldg., Donald MacDonald, Chief, Sally Ayling; **Los Angeles**—1125 W. 6th St., Kemp Anderson, Jr., Chief, Michael Murphy, Jack Meyer, Marvin Petal; **San Francisco**—68 Post St., Jenness Keene, Chief, Donald Winston, Alison Lunt; **Seattle**—6040 Fifth Ave., N.E., Ray Bloomberg.

Foreign News Bureaus: London—John Shinn; **Paris**—Robert Farrell; **Mexico City**—Peter Weaver; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Caracas**—John Pearson; **Moscow**—Ernest Conine.

Correspondents: In 70 principal U. S. cities and 70 cities throughout the world.
Director of News Bureaus: John Wilhelm; Managing Editor, Margaret Ralston.
McGraw-Hill Economics Department: Dexter M. Keezer, Director.

Publisher, Robert F. Boger

ENGINEERING NEWS-RECORD, Vol. 164, No. 10, MARCH 10, 1960

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U.S.A. Title registered in U.S. Patent Office. ©Copyright 1960 McGraw-Hill Publishing Co., Inc. All Rights Reserved.

UNCONDITIONAL GUARANTEE: We agree, upon request to our New York office, direct from paid-up subscribers, to cancel any subscription if ENGINEERING NEWS-RECORD's editorial service is unsatisfactory, and will refund the proportionate subscription price of any unmailed copies.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Fulfillment Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify, publisher *promptly of any change of address, giving old as well as new address, and including postal zone number,* if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

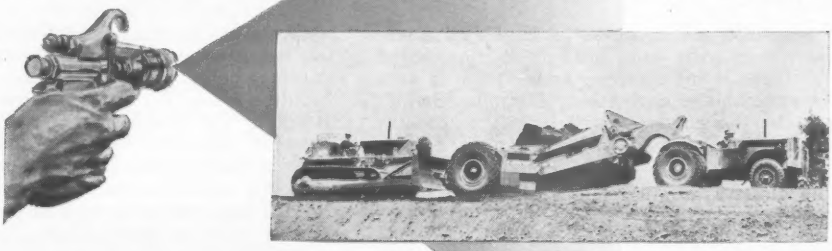
Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

RUST TARGET

The Rust-Oleum System STOPS RUST and matches original equipment colors!

Why let moisture, sun, fumes, heat, and weathering *zero in* to make a rust target out of your costly equipment? Rust-Oleum protection brings new life to your machinery with tough, decorative coatings that last and last! If your equipment is rusty – just apply Rust-Oleum 769 Damp-Proof Red Primer right over the sound rusted surface after wire-brushing to remove rust scale and loose rust. Then – match your original equipment color with your choice of bright, lustrous Rust-Oleum finish coatings.

Keep your machinery looking tip-top with Rust-Oleum for smarter on-the-job appearance and better performance. You'll receive prompt delivery from your nearby Rust-Oleum Industrial Distributor. Write for our complete catalog with color charts, and for a free test sample to apply over rust. Try it . . . see what Rust-Oleum can do for you.



There is only one Rust-Oleum... Distinctive as your own fingerprint.

RUST-OLEUM®
STOPS RUST!®

RUST-OLEUM CORPORATION, 2549 Oakton Street, Evanston, Illinois

Wash Windows From The **OUTSIDE** Without Disturbing People **INSIDE**

. . . . . *And SLASH Your Cleaning Costs*

The worker has complete safety when in this cage regardless of height. He can move himself quickly to any part of a building wall.

More than 200 windows like this can be washed sparkling clean in an 8-hour day by one man in the motor-driven Cleveland Tramrail traveling unit.

IT is usually inconvenient and disturbing to have men with water buckets shuffle through busy offices when cleaning windows. It is even more annoying to have the windows opened. In the winter this allows freezing winds to come in. In the summer it upsets operation of air-conditioning equipment.

Cleveland Tramrail equipment enables washing windows on the outside without opening them. And the work can be done much faster at far lower cost. It makes the work easier for the workman and provides him with real safety. It eliminates the need of safety belts and associated dangers. It does away with heavy cumbersome ladders that must be carried, set up, climbed and taken down.

The equipment makes it simple and fast to reach any part of a wall for maintenance of any sort. Painting, pointing, caulking can be done quickly. When installed early on a new building under construction, the equipment can be so helpful with window installation and other erection work that its cost can be partly or completely absorbed in this way alone.

Cleveland Tramrail window washing and building maintenance equipment operates on a track that may be attached in various ways at the top of building walls. A carrier that rides on the track supports the worker's cage. The unit may be traveled vertically, lengthwise, and around corners, enabling the worker to reach any window or part of a wall. He requires no additional help, as he can move the unit while in the cage either by manual effort or motor drive.

Whether your building is old or new, you will discover that Cleveland Tramrail equipment offers tremendous advantages. If you are planning to build, for greatest gains, check into the equipment at once.

Write for free illustrated booklet No. 2022

CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 3152 E. 290 ST. • WICKLIFFE, OHIO

ON BIG JOBS YUBA TOPS-OFF ON TIME

Experienced, schedule-wise structural experts deliver the skill and service you need to get the job done right—and on time

Take the years behind Yuba's specialized experience. Add the skills developed by competent, fast-moving erection crews. Result: a succession of big jobs completed on schedule—and in record time.

That's why Yuba Erectors, using advanced technologies, procedures and equipment, take on the big, tough assignments in steelwork—*anywhere in the country*. For it is on the large and demanding projects, where time is all-important, that Yuba's winning combination best proves it's ability to race the calendar without sacrificing either efficiency or economy.

Yuba offers nationwide fabrication and erection of steel on all types of structures. On your next big job—whether it's a skyscraper office building, hotel, industrial building or bridge—call on Yuba... for fast work by experts in the field of structural erection.

YUBA

specialists in structural and heavy mechanical erection—nationwide

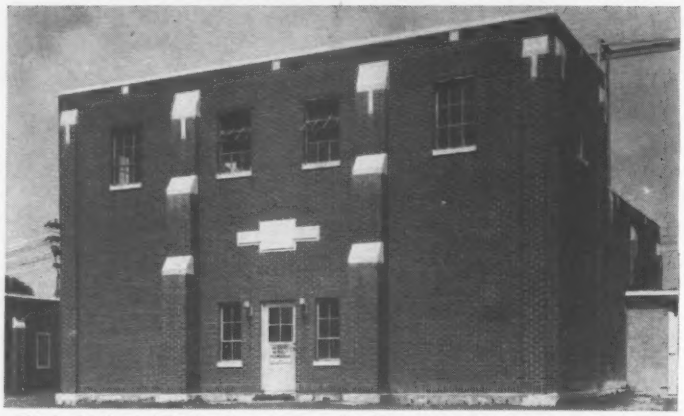
YUBA ERECTORS

4300 Eastshore Highway, Emeryville 8, California • A Division of

YUBA CONSOLIDATED INDUSTRIES, INC.

Sales Offices in Atlanta • Buffalo • Chicago • Cleveland • Houston • Los Angeles • New York • Philadelphia • Pittsburgh • San Francisco • Seattle

Use Northern Gravel for Rapid Sand Filter



This is the Water Softening Plant at Evansville, Wisconsin. Another of the many, many such plants throughout United States that have used filtering sand and gravel from the Northern Gravel Company.

Filter Sand Specifications

are carefully laid out. The Effective Sizes and Uniformity Coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with an effective size between 0.35 MM and 1.20 MM.

Chemical Quality

of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

supporting the Filter Sand Bed must be, in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 40 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company

Muscatine, Iowa

Box 307

Phone: Amherst 3-2711

Reader Comment

Boosts Composite Design

SIR—When highway bridge designers realize they can get 100-ft clear middle span and 80-ft side spans, a continuous structure of 260 ft, with 36WF150 beams and welded cover plates or heavier sections in the larger moment sections, then steel will really come into its own. This is for H20 S16 loading, AASHO Specifications, seventh edition, 1957.

A recent book, "Composite Construction in Steel and Concrete" by Viest, Fountain and Singleton, shows how to make such a design. The authors' design is for composite action in the positive moment zone only, using shear connectors between the dead-load points of contraflexure.

The writer has found, however, that the usual longitudinal temperature and distribution steel is not sufficient to prevent visible cracks over the intermediate supports. This results from the slab bonding with the top flange of the steel beam even without shear connectors. Additional longitudinal reinforcing is thus required in the slab.

The 1957 AASHO Specifications allow this additional reinforcing to be included in computing the total moment of inertia only if shear connectors are used throughout the negative moment zone. Some reduction can be made in the top cover plate where additional reinforcing steel is used in the slab. However, no tension in the concrete is allowed as resisting moment.

Some designers do attempt to use the transformed section in the negative moment zone. But this is contrary to AASHO Specifications.

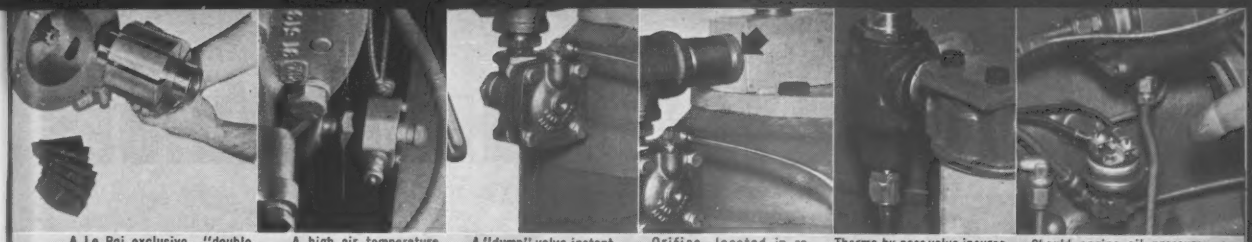
VERNON H. SMITH
Structural Engineer
Memphis, Tenn.

Bridge Contest Help

SIR—In his letter, Walter R. Hnot raises the question of whether the recent contest sponsored by the American Bridge Co. for the design of steel bridges helped the steel industry and specifically its position with respect to the competition of prestressed concrete in the highway program (ENR Jan. 21, p. 12). His critical comments regarding the award designs imply that the contest was of little help and that the award designs might have some

(*Reader Comment continued p. 10*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



A Le Roi exclusive—"double-life" rotors for both low and high pressure cylinders. When vanes wear one side of rotor slots, simply turn the rotor end-for-end. Rotors can't be assembled wrong. Cylinder and bearing retainers are precision mated and dowelled.

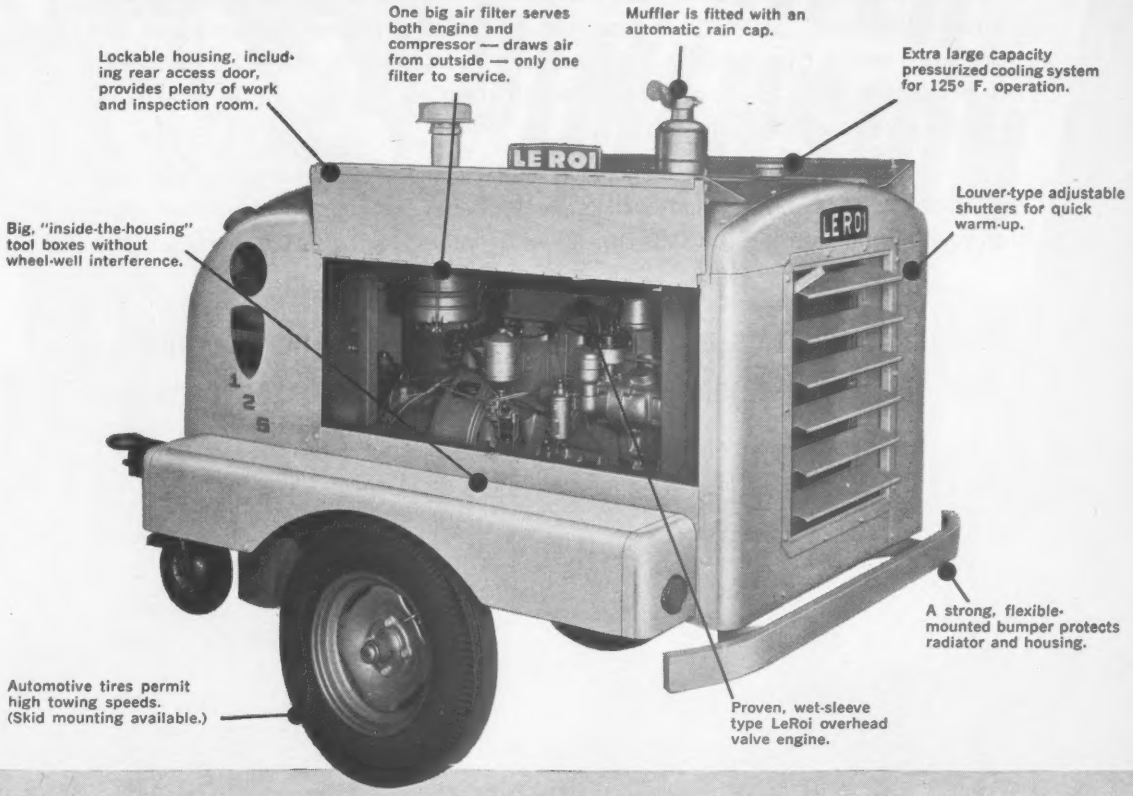
A high air temperature switch is located at the discharge connection of the high pressure cylinder. It immediately cuts off engine if temperature of air-oil mixture in air-end exceeds 230° F.

A "dump" valve instantly releases air pressure in receiver when compressor is shut down. This eliminates possibility of oil backing-up into the compressor air-end.

Orifice, located in receiver outlet, prevents insufficient oil cooling and lubrication of compressor air-end. It automatically insures a minimum of 40 pounds of pressure in the air receiver.

Thermo-by-pass valve insures proper lubrication of compressor air-end during warm-up. Oil is directed to air-end oil pump until oil reaches 130° F. Valve then closes and oil circulates through oil cooler.

Should engine oil pressure drop too low for any reason, this cut-off switch automatically stops engine. Usually found only on larger machines, feature is standard on the 125RG2 rotary.


One big air filter serves both engine and compressor — draws air from outside — only one filter to service.
Muffler is fitted with an automatic rain cap.
Lockable housing, including rear access door, provides plenty of work and inspection room.
Extra large capacity pressurized cooling system for 125° F. operation.
LE ROI
LE ROI
Louver-type adjustable shutters for quick warm-up.
Big, "inside-the-housing" tool boxes without wheel-well interference.
A strong, flexible-mounted bumper protects radiator and housing.
Automotive tires permit high towing speeds. (Skid mounting available.)
Proven, wet-sleeve type LeRoi overhead valve engine.

LIGHTEST AND SLOWEST RUNNING IN ITS CLASS

This 2280-lb. lightweight compressor is designed to save you time, manpower, and money whenever you need dependable 125-cfm air supply.

It's the lightest portable 125 rotary on the market — built with the operator in mind. One man can easily swing it into position on the job-site. And it's balanced for fingertip liftability — with handles on the tow bar and caster wheel to prevent "knuckle-busting."

Le Roi design is easy on the pocket, too. The rotary delivers 125 cfm of free air at 100 psi at only 1600 rpm — 150 to 400 rpm slower than other makes. This means longer engine and compressor life. What's more, superior air-end accessibility cuts down-time and costs for vane inspection and servicing.

See the 125 rotary at your Le Roi distributor's showroom. Or write for Bulletin 123 to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

LE ROI 125 ROTARY COMPRESSORS

PC-03

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

If you use rear-dump haulers...

Backed by better than 25 years of specialized experience in building off-highway earthmoving equipment exclusively, Euclid's modern rear-dump line incorporates advanced engineering that is a result of unmatched field experience. From the 10-ton Model R-10 to the big 55-ton "Euc" with two engines and a total of 672 h.p., Euclid Rear-Dumps are job proved to meet today's requirements for big performance. This greater dimension... in range of capacities, in choice of engines, transmissions and tire sizes, and in type of hauler... and in parts and service facilities of a world-wide dealer organization, too... can mean lower hauling costs and more work-ability on every one of your rear-dump jobs.

Have the Euclid dealer in your area give you facts and figures to compare with your own hauling costs... you'll find Euclid's greater dimension pays off in a better return on your investment. EUCLID Division of General Motors • Cleveland 17, Ohio

Payload capacities of 10, 15, 18, 22, 27, 40 and 55 tons... also semi-trailer models of 12, 22, 35 and 50 ton capacity.

When you compare Rear-Dump Haulers, check these 7 points...

- is maker experienced in the field... known for building a dependable, well-engineered product?
- does machine have required performance ability needed... capacity and speed for high production work, power and traction for rough going and steep grades?
- well-balanced for size of loading equipment... hoppers and controlled dumping needs?
- is there good parts and service availability... at both manufacturer and dealer level?
- are maintenance manuals, parts books and service literature complete... is machine designed for easy servicing?
- is machine easy to operate... convenient controls... good visibility... operator comfortable so that efficiency is maintained for entire shift?
- can required production be maintained at low cost... construction rugged enough to withstand heavy service with minimum maintenance?

Euclid Rear-Dumps meet every one of these important requirements... and more!

rs ..check

EUCLID'S GREATER DIMENSION

BIG POWER . . . BIG CAPACITY . . . BIG PERFORMANCE

Model R-27 has heaped capacity of 26½ yds. . . . rated payload is 54,000 lbs. . . . available with Cummins 335 h.p. or GM 336 h.p. engine . . . 4-speed Torqmatic Drive with converter lock-up and Torqmatic Brake . . . dual hydraulic booster steering . . . 18.00 x 25 tires on all wheels . . . rugged body with twin hoists . . . top speed with full payload, 34 mph. . . . available in two body types, standard for all-around use and quarry for hauling big rock.

ENGINEERED FOR EASY SERVICING

Like other Euclids, the R-27 is of simple, rugged design for years of dependable performance at minimum maintenance cost. When repair or replacement of major components is necessary, service-minded engineering saves time and money, too. For example, a transmission can be removed and replaced in just one-eighth the time required for the same work on a competitive hauler of the same capacity . . . engine replacement takes only one-half as many man-hours.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

THE WILD N-III HIGH PRECISION LEVEL is universally accepted as the standard wherever absolute accuracy, dependability and ruggedness are paramount considerations. The N-III is easy and quick to set up and operate.

Three models are available to meet both field and industrial requirements, reading direct to .1 mm; .001 inch; .0005 ft.

All have tilting screw, coincidence level and built-in optical micrometer.

Write for Booklet N-III.

WILD
HEERBRUGG
INSTRUMENTS, INC.
Main at Covert St. • Port Washington, N.Y. • POrt Washington 7-4845
FULL FACTORY SERVICES

difficulty in ever seeing realization.

I cannot take a position on the respective merits of the award designs in the American Bridge competition, but I feel somewhat qualified to claim that contests of this nature have done a great deal in the past to establish the present dominant position of welded steel bridges and are continuing to make this type of construction increasingly competitive with prestressed concrete. Our James F. Lincoln Arc Welding Foundation, beginning in 1949 as the result of a suggestion of the late Wilbur Wilson of the University of Illinois, has sponsored a series of five bridge competitions. The most recent of these, in 1958, was entitled Welded Bridges for Interstate and Defense Highways.

The objective of this competition was to serve the national interest by encouraging bridge designs that would save steel and money and produce structures of esthetic appeal and safe and efficient performance. The significance of this competition is that with one exception all of the award designs either had been or were being built as a part of the Interstate and Defense Highway System. A book containing the details of these designs was recently published.

The American Bridge competition was sponsored with very much the same intent and very similar conditions as we have had in our series, and I am sure it will contribute to the further progress of welded steel bridge design.

CHARLES G. HERBRUCK
Secretary, The James F. Lincoln Arc Welding Foundation
Cleveland 17, Ohio

Slip Form Slips

SIR—In a short description of our slipform paver in operation in North Carolina (ENR Jan. 14, p. 40) there were minor discrepancies in the name of our company and our superintendent, Robert S. Woodlief.

Purpose of this letter, however, is to ask that you clarify the figure in the following sentence: "The Ballenger firm estimates the method has reduced the cost of paving about 45 cents per square yard." Either this figure of $.45 was an incorrect interpretation by your reporter or our superintendent. Our records indicate that our reduced cost of paving with this method is very close to 5%, which is much lower than you quoted and we believe this figure should be presented to your readers.

The major saving in the slipform method is to us the reduction of common labor. It is highly probable that in the "Up East Area" where the common labor rate approaches the skilled, a saving of $.45 may be realized.

J. R. CHANDLEE, JR.
Vice President
Ballenger Paving Co.
Greenville, S. C.

(*Reader Comment continued p. 14*)

TAKES OFF ITS HAT TO NOBODY!

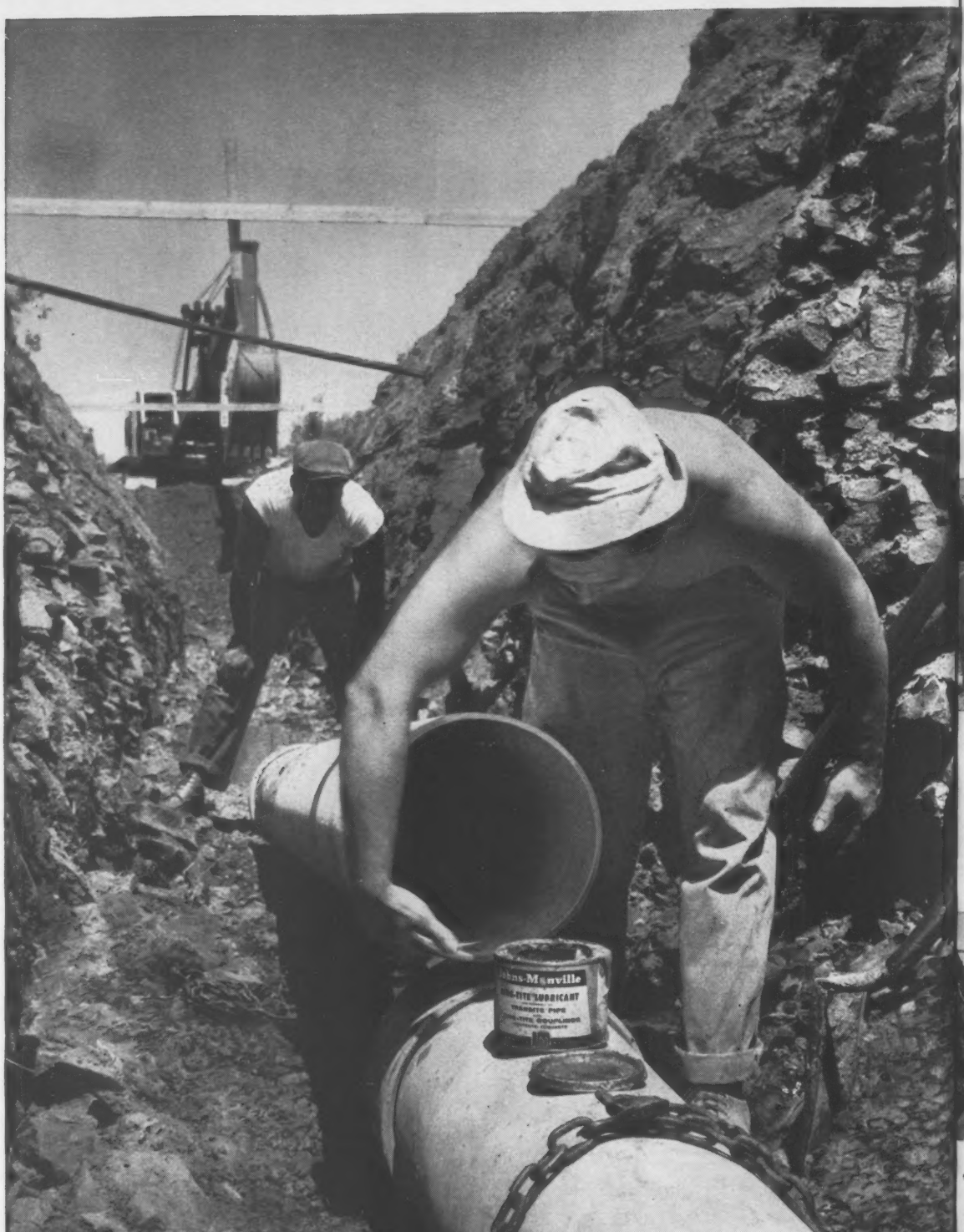
Carriage, lag and machine bolts.
All sizes. Quick delivery from stock.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

11


Johns-Manville

"In one day we can install as much as 600 feet of 12" Transite Sewer Pipe"

Says Ernest Renda
E. Renda & Son Contracting Co.
Green Brook, N. J.

"Today the only way you can show a profit," says Mr. Renda, "is to increase your productivity—to lay more pipe per day. That's why we feel surer working with Transite". . .

Mr. Renda continues

"It is easily handled on the ground and in the trench. It is quickly assembled and installed. It reduces job site operations to such an extent that we can work with fewer men. Another important Transite advantage is tight joints . . . and there are fewer joints to make. Never any trouble passing leakage and infiltration tests. Long Transite lengths give us a straighter line . . . better grade.

"Working with Transite gives us another advantage—the **Johns-Manville installation service,"** he continues. "Bob Anderson, the J-M field instructor (shown at right, center photo), constantly **advises me on new methods** used on other jobs. And ten years ago, it was this same instructor who taught me to assemble Transite so that I could teach my men how to install it."

Transite® Sewer Pipe installs quickly, easily to keep installed costs low . . . its smooth interior permits flatter grades . . . and the Ring-Tite® Coupling answers the toughest infiltration and root problems. Send the coupon for your copy of TR-206A—"The Book Designed with the Contractor in Mind." Mail the coupon now!

JOHNS-MANVILLE

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville
Box 14(EN-3) New York 16, N.Y.

Gentlemen: Kindly send me the informative, 16-page Transite booklet which is written especially for contractors.

Name_____

Firm_____

Street_____

City_____

Zone_____ State_____

Leading contractors use **Ramset** *to*

CONTROL FASTENING COSTS

Ramset's speed, mobility, versatility and efficiency assure lowest possible fastening cost on every construction job. Ramset powder-actuated fastening eliminates tedious drilling and plugging . . . is up to 15 times faster than other methods. Just a pull of the trigger sets a drive pin, threaded stud or eye pin permanently in steel or concrete. Ramset's proven quality is your assurance of consistent performance, time after time.

For quick, economical fastening, even in the toughest spots, you can depend on Ramset tools, fasteners and charges. Your Ramset dealer will be glad to demonstrate, right on your job! Call him (under "Tools" in Yellow Pages) or write us direct for cost-cutting advice on your fastening requirements.

INSIST ON THE RED TIP FASTENER WITH THE W TOP

Ramset® Fastening System

OLIN MATHIESON · WINCHESTER-WESTERN DIV. · 287-C WINCHESTER AVE. · NEW HAVEN 4, CONN.

. . . Reader Comment

Fill Up Those Seats

SIR—In Seattle, it is being suggested that, to finance a second bridge over Lake Washington, a toll be imposed on current traffic over the present floating structure.

During numerous crossings, I observed that the traffic, particularly in the rush hours, consisted mostly of cars occupied by only the driver. My conclusion from more than a dozen sample counts was that not more than one out of ten cars carried any one besides the driver.

The purpose of the proposed bridge, of course, must be to make it easier to get more people into the downtown area. There are two obvious ways to accomplish this: The first is to build a new bridge; the second is to bring them in in the empty seats of the cars now using the present bridge. If the toll to be paid for each car were calculated in some manner that would make it advantageous to the driver to bring other riders with him, the present situation would be relieved and the date when enlarged facilities became an absolute necessity would be measurably postponed.

Such a method of fixing tolls would not prevent the individual who insists on riding alone from continuing in his way of life. It simply would require that he make a fair payment towards the cost of providing the improvements he wishes to enjoy. For traffic other than the daily in-and-out commuter, such an arrangement might also prove of advantage to the downtown business interest. The afternoon shopper or the devotee of amusement places, might invite friends or neighbors to go along, at no toll cost to them.

Why not also a similar arrangement for assessing charges at city owned or operated parking places?

F. R. McMILLAN
Asheville, N. C.

Where to Place Girts?

SIR—Can anyone tell me what is the correct or economical method of girt framing for the following example?

Columns are 18 WF 50 (half depth —9-in.) and girts are 5-in., 6.7-lb channels. Work is shop riveted and field bolted.

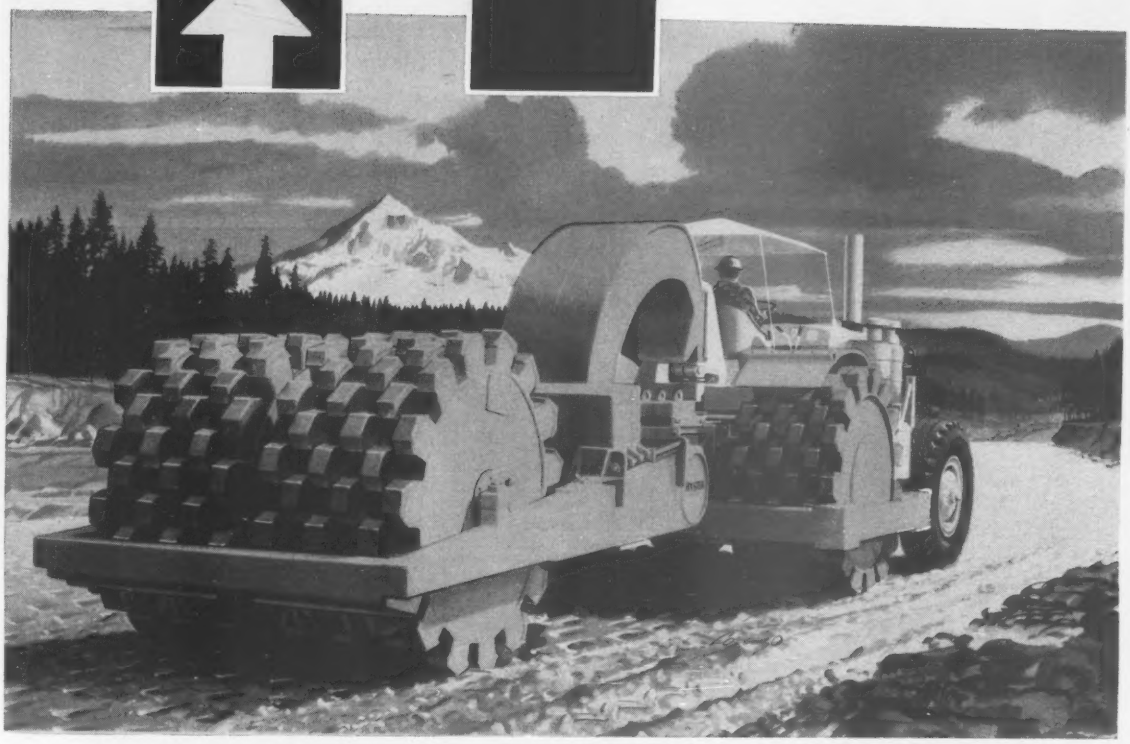
Should the girt line be 14 in., 14¼ in. or 14½ in. from the center line of columns?

I was taught to add about ½ in. to the sum of the half-depth of the column and the girt depth. This was to allow for overrun of columns. I was told by a prominent fabricator that if we specified 14 in., a fabricator would block all channel flanges, which would run up the cost of the job.

But today, I see many examples of this close spacing, and I would like to know the modern, accepted spacing.

T. B. RIGHTS
Consulting Engineer
Orange, N. J.

HYSTER



Lowest compaction cost per yard—

HYSTER® has it!

HYSTER DW20A Compacters give you a new competitive advantage. First, these high-speed machines cut costs to as low as 3c per yard. Second, spreading production is no longer limited by slow rolling methods.

Call your Caterpillar-Hyster dealer for on-the-job performance facts.

TRACTOR EQUIPMENT DIVISION—Construction and logging equipment
INDUSTRIAL TRUCK DIVISION—Lift trucks, mobile cranes, straddle carriers
MARTIN TRAILER DIVISION—Heavy machinery hauling trailers
INTERNATIONAL DIVISION—Overseas manufacturing, sales and service
Factories: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill. • Nijmegen, The Netherlands • Glasgow, Scotland • Sao Paulo, Brazil • Sydney, Australia (Licensee)

HYSTER

HYSTER COMPANY
TRACTOR EQUIPMENT DIVISION
P. O. Box 328 • Peoria, Illinois

That's Lock Joint Concrete Pipe!

Whether it be the largest concrete pressure pipe in the world, or a small diameter drainage pipe;
. . . . pipe for the highest heads common to water works practice, or pipe for only nominal pressure or partial vacuum;
. . . . pipe to resist extremes of overburden, or pipe to meet the complexities of industrial or plant piping;
. . . . LOCK JOINT can provide all these, and more.

You will also find it a dependable, durable, maintenance-free pipe of sustained high carrying capacity which is backed by a company with over a half century's experience in the development and production of concrete pressure, sewer, culvert and subaqueous pipe.

LOCK JOINT PIPE CO.
East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Kan. • Perryman, Md. • St. Paul, Minn. • Winter Park, Fla.

Pressure • Water • Sewer • **REINFORCED CONCRETE PIPE** • Culvert • Subaqueous

ENGINEERING NEWS-RECORD

Vol. 164, No. 10 March 10, 1960

Number of copies printed this issue 85,559

CONTENTS

'Buy-American' Ban Put Off Again..... 21
Foreign Steel Cinches a Contract..... 22
Model Is Better Than Blueprints..... 22
Tall Concrete Towers for Chicago..... 23
Airport Aid: Most of it Goes for Paving..... 24
Concreting at 50 Degrees Below Zero..... 25
Moses Accepts Another Mountain of a Job..... 25
Hotel Saada No Match for Moroccan Quake... 26
Two Railroads Test Concrete Crossties..... 26
Code Promotes Modern Methods..... 26
New Plant Aids Potomac Cleanup..... 28

FEATURES

Niagara Schedule Forces Fast Winter Pace.... 30
Oil Pipeline Pulled 19 Miles on Sea Bottom.... 38
Fantastic Probing Gear for BMEWS..... 45

FIELD AND OFFICE

Man-Made Landslides Are Safer..... 47
Bidders Must Guarantee Boilers..... 47

NEW PRODUCTS

Improved 52-hp Crawler Tractor..... 49
Chemicals Stop Water Seepage..... 49

INTERNATIONAL

NATO Opens New Headquarters..... 53
Cairo to Study Qattara Hydro..... 53

MEN AND JOBS

Burdell Takes UNESCO Mission..... 58
AIA Medal to Mies van der Rohe..... 58

BUSINESS AND FINANCE

New Depreciation Rules in Sight..... 69
Contract Awards Up 11% in February..... 70

LABOR

NLRB Loses Brown-Olds Cases..... 71
Picketing Bill Wins Approval..... 72
Industry Promotion Fund Set Up..... 72
Steel's Agency Shop Clause Hit..... 73

Reader Comment ...	6	Materials Prices	61
Washington Observer	19	Construction Reports	62
Obituaries	59	Statistics, Indexes ...	68
Unit Prices	60	Editorials	84

Picture Credits

Cover, 31, 32—ENR Staff; 23—Bill Engdahl, Hedrich-Blessing; 25—McGraw-Hill World News; 26—UPI; 28—Dennison Studio; 30—New York State Power Authority; 38, 39, 40—Collins Construction Co.; 45, bottom—General Electric Co.; 47—Richard Harpster.

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

ONE UP, ONE DOWN—Construction and building costs are moving in opposite directions this month. ENR's 20-Cities Construction Cost Index is up 0.1% to a record 813.46. But the Building Cost Index is down 0.1% from February to 555.16. Both indexes are based on 1913=100. Costs during the rest of March will depend on lumber prices. Demand for lumber probably will strengthen because of February's boost in mass housing contract awards. But until housing's impact is felt, the lumber market will remain sluggish.

NEW PRIME MOVER COMING—Look for an old-line tractor manufacturer to introduce a giant prime mover. Shakedown tests are in progress now. The 70-ton machine is powered by turbo-charged twin 375-hp engines, swivel connected back to back. It will mount 8-ft-dia tires with a tread of about 15 ft. Top cross country speed is 30 mph or more.

LAST WORD AT NIAGARA?—The U.S. Supreme Court overruled a lower court this week to clear the way for the New York State Power Authority to acquire 1,383 acres of Tuscarora Indian land for a pumped-storage reservoir for the Niagara Power Project. The extra storage area will add 100,000 kw to the firm generating capacity of the development. (For more on Niagara, see p. 30.)

TRADE BARRIER—A Houston suburb has banned use of foreign materials in local public works. The Deer Park City Council ordered the city engineer to specify U. S.-made materials in all future contracts. (For more on foreign competition, see p. 21, 22.)

WILL IT BE A DUD?—In 1955, Nikita S. Khrushchev gave Rangoon, Burma, a five-story, 208-room hotel as a special gift. The gift is nearly built now, but so far three foreign concerns have turned down offers to run the place. One expert says $1 million in construction changes would make the hotel pay off.

NO CREDIT—Two Detroit builders last week filed a $675,000 damage suit against Dun & Bradstreet, Inc. Morton Blum and Richard Kor, officers of Cameo Building Co., say an adverse D & B financial report caused the failure of a proposed 270-unit housing project in Orlando, Fla. They had to abandon the plan when banks reneged on loans, the builders contend.

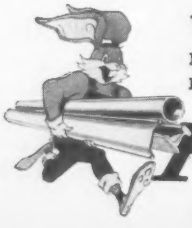
TAKE-OFF DELAYED BY A SLOW FREIGHT—If the main runway of the Akron Municipal Airport is extended as planned, it will intersect with a single-track spur of the B&O Railroad. Officials were torn between an airport runway with railroad crossing gates and a railroad with airplane crossing gates. They'll probably build a tunnel.

"CALL FOSTER . . .
THEY RENT PILING PLUS"

One call to Foster delivers all the piling you need—"plus" all necessary driving accessories, at fixed, low rental rates.

No need to tie up capital in piling inventories, or "make do" with substitute sections: you get exact sections and exact lengths when you use Foster's Piling Rental Plan. Whether it's a rush job or a routine order, we will deliver promptly all standard piling sections, corners, crosses and tees from our nationwide warehouses and field stocks.

For help with your piling requirements, and for highway and construction products, call the Foster specialist near you.



Write **L. B. FOSTER CO.** for new 24 page Piling Catalog EP-3

PITTSBURGH 30, PA. • NEW YORK 7, N. Y. • CHICAGO 4, ILL.
HOUSTON 2, TEX. • LOS ANGELES 5, CAL. • ATLANTA 8, GA.

Faster From Foster

Rental Steel-Sheet Piling • Pipe Pile • H-Pile • Lightweight Piling • Pipe • Rail

WASHINGTON OBSERVER

- U.S. steps up anti-bias campaign
- Water pollution: It's getting worse
- ABC funds coming

● **The federal government is getting tough in the fight over discrimination against Negroes on federal construction jobs.** The "Nixon Committee" (the President's Committee on Government Contracts) and the Justice Department are threatening legal force to end racial discrimination in employment practices on federal jobs.

Contractors are caught in the middle between the official threats of court action on the one hand and work stoppages by all-white union locals on the other, a risk they assumed by bidding on federal jobs.

The situation as of early this week:

General Services Administration summoned two contractors working on federal projects in Washington—McCloskey Construction Co. of Philadelphia on Capitol Hill construction and Norair Engineering Corp. on a new museum building for the Smithsonian Institution. The intent: to inform McCloskey and Norair that they must employ Negro electrical workers on the projects. Both hire members of the all-white Local 26 of the International Brotherhood of Electrical Workers.

Advance information was leaked to the effect that the Justice Department will move in a hurry if the contractors argue that Local 26 cannot or will not refer Negro electricians to the jobs.

This is an entirely new departure, following closely on the heels of a committee resolution stating, in essence, that contractors cannot rely on arguments that their union labor sources are all-white. Informed sources guessed the basis for a suit would be breach of contract—an allegation that the contractors' agreement against racial discrimination in employment supersedes any understanding with any labor suppliers. AFL-CIO President George Meany has agreed to put organized labor's full weight behind the effort to crack the color line in all-white unions, and, if need be, to help find qualified Negro electricians for the two projects now at issue.

—

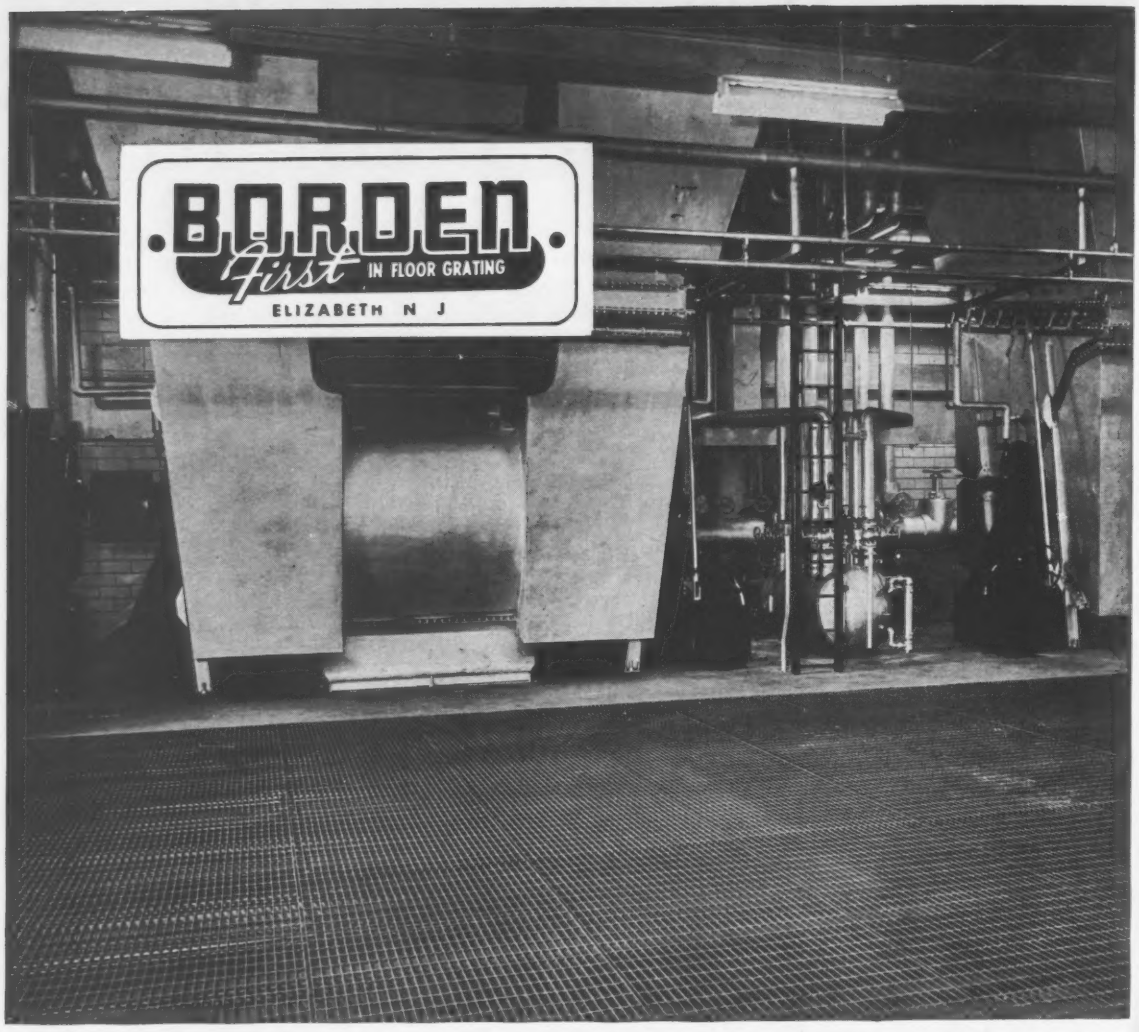
● **Severe water pollution problems will face this country in the next 20 years,** says a report from the Public Health Service. The report was prepared for the Senate Select Committee on Water Resources, headed by Sen. Robert S. Kerr (D., Okla.).

Even construction of the backlog of city sewage treatment plants now planned will still find U. S. rivers carrying nearly three times the allowable pollution in 1980, the report says.

The present 17 billion gallons of city sewage discharged daily is expected to grow to 29 billion by 1980. The report says increased use of radioactive materials and synthetic organic chemicals make treatment problems more difficult.

—

● **Congressional highway leaders hope to have ready for a vote a $925-million-a-year authorization for ABC roads in fiscal 1962 and 1963.** Witnesses before a House subcommittee last week sought a higher authorization—$950 million. But subcommittee members think the full Public Works Committee will approve the $925-million figure.



HERE'S HOW BORDEN FLOOR GRATING CUTS COSTLY FIELD CORRECTIONS

Insures correct dimensions, fit, and placement . . . .

1. A shop drawing of the job is submitted to the customer for approval, when necessary. This plan shows the size and shape of the grating area—how grating clears all obstructions.
2. Each finished panel is carefully checked for accuracy of dimensions.
3. Each panel is plainly marked with its number to insure quick, easy installation.
4. The entire platform is laid out on our shop floor. Over-all dimensions and obstruction openings are checked against shop drawings.
5. Erection diagram showing panel mark numbers is supplied for field installation.

BORDEN METAL PRODUCTS CO.

Gentlemen:
"Please send me NEW 1960 BORDEN Catalog"

NAME .....

TITLE .....

COMPANY NAME .....

ST. AND NO. .....

CITY AND STATE .....

Write today for free 16-page catalog showing all basic types of grating; more than 30 dimensional drawings of sub-types; eight safe load tables for steel and aluminum grating.

BORDEN METAL PRODUCTS CO.

"Greatest name in gratings"

815 Green Lane Elizabeth 2-6410 Elizabeth, N. J.

Plants at: Union, N. J. - Leeds, Ala.
Conroe, Texas - Beeton, Ontario

'Buy-American' Ban Put Off Again

- **Use of foreign materials will cause serious unemployment, complains Pennsylvania's governor; Department of Commerce gives in.**

- **Another factor in the postponement is pressure from small manufacturers of bars; they can't meet the competition from foreign producers.**

The Department of Commerce for the third time postponed the effective date of its enforcement of the Buy-American Act on the state highway departments.

Now the Department of Commerce won't take any action to make the states comply with this rule until after May 1.

Pennsylvania Gov. David L. Lawrence led the fight for postponement. He claims that the use of foreign steel and cement on highways in Pennsylvania will cause serious unemployment problems in the state. Pennsylvania is the country's leading producer of steel and cement.

"I'm going to fight for every job I can save in Pennsylvania," Governor Lawrence told ENR. He promised that he will keep on fighting to get another postponement of compulsory acceptance of foreign material when the present 61-day reprieve runs out.

The governor—backed up by Rep. Francis E. Walter and Senators Joseph F. Clark and Hugh Scott, all of Pennsylvania, and a squad of high-ranking state officials—met with Commerce Secretary Frederick H. Mueller (ENR Mar. 3, p. 19). After a conference that lasted more than an hour, Mr. Mueller announced the postponement.

The Buy-American Act says that states must buy foreign materials for federal-aid highway projects if costs of domestic products are more than 6% greater than the foreign prices. When the bid comes from a producer in an area of substantial unemployment, this differential goes up to 12%.

But Pennsylvania officials say that the differential would have to go as high as 25% before the state's manufacturers of steel and cement could underbid foreign competitors.

This results in a situation where, for instance, the Pennsylvania Department of Highways could find itself buying European steel at a time when Pennsylvania steel plants are running at less than capacity and when some of the state's steelworkers are unemployed.

The Pennsylvania Department of Highways buys about 7% of the 46 million bbl of cement produced annually in the state, paying $15.6 million for it. The department also spends $39.5 million for 119,900 tons of steel per year.

"While half of the highway system is on the federal-aid program, construction expenditures are not in the same ratio, but are closer to one-sixth all-state and five-sixths federal aided," said a Pennsylvania highway official. "More than $40 million would be involved in 1960, after allowing the secondary federal-aid exemptions."

"We are torn between two serious problems," says Governor Lawrence. "The United States is interested in building up the economic situation in foreign countries, but now those countries are recovering and if they can lay down the materials for road construction cheaper, it will present a serious employment problem in this country. There is more at stake than just the steel highway construction uses."

More than $400 million was spent in the U. S. last year on cement and structural steel.

Suppliers of reinforcing bars from Luxembourg, Belgium, Germany, France, Mexico and Japan have been competing successfully with sellers of reinforcing bars in most of the U. S.

Heavy pressure for the postponement had come from sellers of reinforcing bars—although makers of portland cement and asphalt have also gone on record that they are losing business to foreign suppliers.

Particularly hurt by enforcement of the act's provisions would be companies that make reinforcing bars by reprocessing railroad rails. These companies are primarily one-product, small businesses that are particularly vulnerable if they can't sell this product. On the other hand, larger steel firms and cement producers—while worried about foreign competition—aren't really likely to be run out of business.

Southwest Steel Rolling Mills of Los Angeles is one of the firms particularly involved; others protesting include Missouri Rolling Mills Corp., Pacific States Steel Corp., Northwest Steel Rolling Mills and Oklahoma Steel Corp.

Commerce Department officials say that West Coast sellers of reinforcing bars had noted that their sales had fallen off and sales of Japanese reinforcing bars had increased. But they also note that up to now, the federal Buy-American regulation has not been put into effect on the highway contracts—so the regulation can't really be blamed for their predicament.

There's no question about the legal authority behind the Bureau of Public Roads "Policy and Procedure Memorandum 21-13" dated Dec. 31, 1959. It says that state officials must make their highway contracts conform to this directive.

In addition, authorizing legislation in the states says that they will abide by federal requirements in accepting the federal funds they spend in highway contracts. Thus the BPR regulation supersedes conflicting state requirements once the regulation becomes legally effective.

Here is a summary of the provisions that some states have that pose restrictions on products of foreign origin:

- **California:** Under its Buy-American Act, contracts for public works or for purchases of materials for public use can go only to persons who agree to use or supply materials produced in the U. S. or manufactured in the U. S. from certain domestic materials, with certain exceptions.

- **New Jersey:** Under New Jersey statutes it is required that domestic materials be used on highways, bridges and other public works "unless the contracting officer shall find with respect to any particular material that it is impracticable or will result in an unreasonable increase in cost."

- **Massachusetts:** Under annotated laws of Massachusetts, it is provided that the Commission on Administra-

(Turn the page)

tion and Finance may prescribe rules for giving preferences to domestic materials.

Certain states have incorporated restrictions against products of foreign origin in their specifications for highway work. Among them are Arizona, Arkansas, Colorado, Oklahoma, Georgia, Washington and New York.

New York for example provides that a preference will be given to domestic articles or materials, conditions of quality and price with duty being equal, and that unless otherwise stated in the contract documents "only domestic articles or materials will be used."

The State of Washington specifies that American-made highway and bridge construction materials shall be used unless otherwise authorized by the Director of Highways. Colorado has a similar provision.

Pennsylvania has barred the use of foreign steel on the basis of a provision in its specifications relating to the testing and inspection of materials during and after the process of manufacture.

Other states have included in their specifications restrictions against the use of materials of foreign origin. Among them are Wyoming, Idaho, New Mexico, Oklahoma, Texas and Hawaii.

Many states, Oregon, for instance, have laws providing for preferences for materials produced within the respective state. These provisions discriminate both against materials produced in other states and foreign materials.

. . . Foreign Steel Cinches a Contract

The high price of American-made materials has lost U. S. steel manufacturers a sizable order—about 14,500 tons of structural steel for the new Balboa Bridge across the Panama Canal.

The price differential between U. S. and German steel was so great that a handicap of almost ¾ million dollars did not keep John F. Beasley Construction Co., Dallas, from coming in low with a bid of $9,119,000. Second bidder at $9,861,000 was United States Steel Export Co., which based its price on the use of domestic material.

Despite the $742,000 spread between the two lowest bidders, Beasley's price edge was less than $22,000. Here's why: In permitting the use of foreign steel the specifications of the Panama Canal Co. required an equalization factor of 10% of the steel purchase price. Another $200,000 was added to cover the extra costs involved in inspection and administration at foreign locations.

Beasley reportedly listed his foreign steel cost at $5.2 million. To determine the effective competitive price, the Canal Co. added the $520,000 handicap and the $200,000 inspection charge to make Beasley's evaluated price stand at $9,839,00—just $22,000 below U. S. Steel. However, the German steel price was quoted for dock-side delivery in Panama, while the handicap applies to job-site delivery. Correction for this will further reduce Beasley's advantage, but not enough to lose him the contract.

Beasley was the only one of the nine bidders to submit prices for both foreign and domestic steel. Two other contractors, whose weighted bids placed them in third and sixth place respectively, figured only on the foreign steel. Six others based their bids only on the use of U. S. materials, and submitted prices that ranged up to $14,875,797.

Government estimate for the superstructure cost was $12,089,560. Beasley's price for the job with domestic steel was $10,849,000—$1.73 million above his own price, using German steel, and almost $1 million above the second place bidder.

Of the 10 items on each of the two bids submitted by Beasley, nine were identical on both sheets. Only the price for erected structural steel varied—$7.77 million for foreign; $9.5 million for domestic. But this made the difference between low and fifth place bid.

The Balboa Bridge is being built with U. S. Funds. It will be 5,425 ft long from abutment to abutment, and will have just under 6,800 ft of approaches. The 1,128-ft main span of the structure will include an 800-ft tied arch suspended from cantilevers. Remainder of the bridge will be of deck-truss construction. Sverdrup & Parcel of St. Louis are the designing engineers.

Peg and plastics model for Panama Canal excavation is . . .

Better Than Blueprints

Bids were opened last week on a contract to widen the Empire Reach of the Panama Canal's famed Gaillard Cut from 300 to 500 ft and deepen it from 42 to 47 ft. Low bidder of 23 competing for the contract was a joint venture of Foster Construction and Williams Brothers, Tulsa, Okla. and San Jose, Costa Rica.

A month previously, on January 21, all the bidders who attended a pre-bid conference in Panama, were able to learn much of what they needed to know without even getting their shoes muddy. They could just look at a model of the job that had to be done.

Set up in the office of Lt. Col. Robert D. Brown, Jr., engineering and construction director of the Panama Canal Co., the model permitted excavation and geology to be viewed simultaneously, something that can't be done easily with blueprints.

The model consists of wooden pegs representing geologic cores drilled from the job site, and plastic strips positioned as sections of the canal bank to be excavated. The top edges of the plastic strips follow the existing ground surface, while lines drawn farther down on the strips represent the final grade. The wooden pegs are colored to indicate the various strata. Shown with the model are A. P. Mann, civil engineer (left) and R. H. Stewart, geologist, who developed it.

Fifth Desalting Plant

Interior picks freezing process for plant in East

A freezing process will convert sea water to fresh in the government's fifth demonstration desalting plant.

The plant will be small—100,000 to 350,000 gpd. It will be located on the East Coast. Construction will not get under way before mid-1961.

The selection of a process for the fifth plant leaves only choice of a site to complete planning of the 10-year saline water program launched in 1954.

The other four projects already scheduled for construction are:

- A 1-mgd long-tube vertical distillery for sea water at Freeport, Tex.
- A 1-mgd multistage flash distillation plant using atomic energy as a heat source for sea water at San Diego.
- A 250,000-gpd electrodialysis plant for brackish water at Webster, S. D.
- A 250,000-gpd forced-circulation vapor compression plant for brackish water at Roswell, N. M.

The specific freezing process to be used will be determined after further experimentation with small pilot plants. Two different methods are under study.

Carrier Corp., Syracuse, N. Y., is operating an experimental plant in which sea water is partially frozen by flash evaporation (ENR Oct. 22, 1959, p. 27). The resulting ice slurry is pumped to a wash-separation column where salt is removed. The vapor is compressed and the liberated heat melts the ice to pure water.

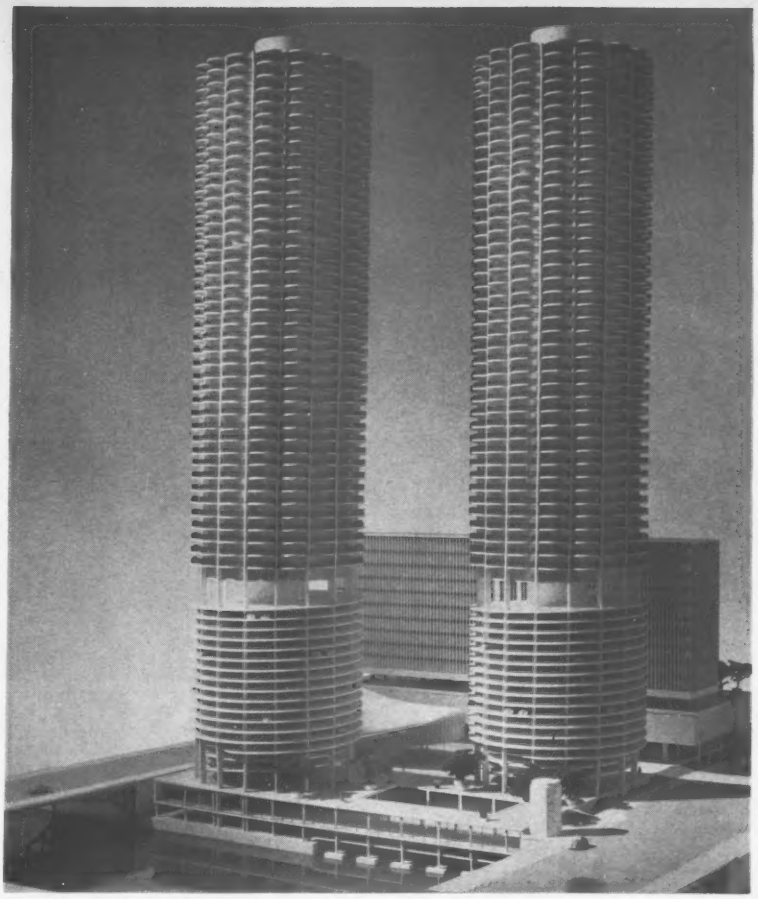
Blaw-Knox, Pittsburgh, received an Interior Department contract to build a pilot plant employing the evaporation of a hydrocarbon refrigerant in direct contact with precooled sea water (ENR Mar. 3, p. 17). The resulting ice slurry is washed and then melted by the heat liberated from the compressed vapor.

Dr. A. L. Miller, director of the Office of Saline Water, points out two advantages of freezing processes: (1) Less energy is required to free sea water than to distill it; (2) low temperature operation reduces corrosion and scaling of equipment.

California Wins Suit Over 1957 Fish Kill

The California Department of Fish and Game received a $15,492 settlement from the Stauffer Chemical Co. for damages in connection with the killing, by pollution, of 2,000 striped bass in San Francisco Bay.

The company admitted dumping at least 25 tons of acid and other wastes into the bay each month, but contended that some other pollutant had caused the 1957 fish kill.



Tall Concrete Towers for Chicago

Ground will be broken this spring for twin 60-story apartments in Chicago.

When finished late next year, they will be among the tallest reinforced concrete buildings in the world, according to Bertrand Goldberg Associates, architects for the $36-million project.

Located on a three-acre site between State and Dearborn on the north bank of the Chicago River, the building complex contains several novel features.

Both apartment towers are circular, about 125 ft in diameter and about 555 ft high. The first six floors will contain laundry, restaurant, tenant storage, shops and service facilities. The next 14 floors will provide helical ramps with 448 parking spaces in each building.

The upper 40 floors of each building will contain 448 apartments. Of this number 128 will be efficiency units; 288, one-bedroom; and 32, two-bedroom. Each apartment will have a curved balcony. Rentals start at $115 per month. Exterior glass curtain walls will extend from floor to ceiling.

The project also will include a 10-story office building; a $1.5-million, 1,200-seat theater; bowling, ice skating, swimming and other recreational facilities; and a marina with slips and storage for 700 boats.

From this last feature, the project is named Marina City. It is sponsored by the Building Service Employees International Union. Financing is expected to be insured by the Federal Housing Administration.

The 10-story commercial building with penthouse will have 172,760 sq ft of usable floor area, with about 18,000 sq ft of rentable area per floor. The 315x60-ft building starts 18 ft above a 315x142-ft promenade, which is two stories above the 10-acre main plaza.

The twin towers, commercial building, theater, promenades, marina and plazas will be reinforced concrete. Some elements may be precast, while others may also be prestressed.

The roof of the theater will be supported by a catenary of steel cables suspended from a reinforced concrete compression ring supported at two points.

Airport Aid: Most of it Goes for Paving

Here are federal-aid allocations for fiscal 1961 . . .

Location (airport)	Federal Funds
ALABAMA	
Birmingham	$ 334,000
Mobile	538,200
ALASKA	
Anchorage	208,500
Fairbanks	1,584,325
Juneau	221,250
ARIZONA	
Phoenix	619,078
Tucson	501,806
CALIFORNIA	
Bakersfield	448,926
Long Beach	258,768
Los Angeles	1,336,170
Oakland	1,027,020
Oxnard	272,008
San Jose	313,476
COLORADO	
Denver	1,250,000
CONNECTICUT	
Danielson	264,400
Windsor Locks	383,104
FLORIDA	
Tampa	686,000
GEORGIA	
Atlanta	390,000
HAWAII	
Honolulu	975,000
ILLINOIS	
Alton-East Alton	217,000
Chicag	751,650
INDIANA	
Evansville	221,350
Indianapolis	1,333,000
Lafayette	551,760
KENTUCKY	
Covington	485,465
Lexington	208,539
LOUISIANA	
Alexandria	362,000
New Orleans (Moisant)	500,000
New Orleans (New Orleans)	371,515
MARYLAND	
Baltimore	370,750
MASSACHUSETTS	
Boston	916,207
Lawrence	274,239
Worcester	1,000,000
MICHIGAN	
Detroit	240,000
Grand Rapids	874,000
Lansing	366,225
Muskegon	275,500
MINNESOTA	
Minneapolis	1,302,635
MISSISSIPPI	
Jackson	$365,474
MISSOURI	
St. Louis	810,000
MONTANA	
Great Falls	250,267
NEVADA	
Reno	213,125
NEW JERSEY	
Newark	1,546,000
NEW YORK	
Elmira	219,300
New York (LaGuardia)	252,000
New York (Idlewild)	773,500
Syracuse	1,323,000
NORTH CAROLINA	
Greensboro-High Point	234,280
OHIO	
Cleveland	955,500
Dayton	242,350
OKLAHOMA	
Oklahoma City (Tulakes)	339,048
Oklahoma City (Will Rogers)	524,218
Tulsa	963,896
PENNSYLVANIA	
Allentown	422,000
Franklin	508,092
Hazleton	323,800
Philadelphia	1,122,000
Pittsburgh	984,310
Reading	239,126
Washington	356,000
TENNESSEE	
Knoxville	402,500
Memphis	1,394,937
Nashville	233,407
Rockwood	384,400
TEXAS	
Austin	334,900
Borger	245,000
Fort Worth	907,500
UTAH	
Salt Lake City	800,460
VERMONT	
Springfield	224,000
VIRGINIA	
Hot Springs	523,925
Lynchburg	320,000
WASHINGTON	
Seattle	830,268
WEST VIRGINIA	
Clarksburg	280,900
WISCONSIN	
Milwaukee	242,450
PUERTO RICO	
San Juan	758,500

The Federal Aviation Agency has allocated federal-aid funds for the nation's airports for fiscal 1961, beginning July 1, and almost 77% of the total will go for construction of runways, taxiways and aprons.

That is the continuation of the allocation trend established last November, when the agency made delayed allocations for the current fiscal year (ENR Nov. 19, p. 47).

The total of $58,835,103 will be dispersed during the year to municipalities and airport jurisdictions in the U. S. That total compares with $57,076,702 allocated for the current fiscal year.

A summary of the work breakdown for fiscal 1961 shows this: 40.9%, or $6,143,831, is earmarked for runway construction; 36%, or $21,161,409, for taxiways and aprons; 10.5% for land acquisition.

Other allocations: lighting, $2,963,375; marking, $71,961; control towers $2,026,428; roads, $6,270; clearing and removal, $1,494,350; fencing, $192,564; other buildings, $696,774.

Continuing the policy laid down by Aviation Agency Administrator Elwood R. Quesada last August, no money is allocated for terminal buildings and other facilities not directly related to the take-off, flying and landing of aircraft.

With the required 50-50 matching funds from the states, total outlay will be about $120 million, the same as expected during the current fiscal year.

FAA follows a policy of allocating money only when local sponsor funds are assured; in cases where airport sites have been selected and approved; for land acquisition to meet established needs; and for runway development to meet urgent traffic needs.

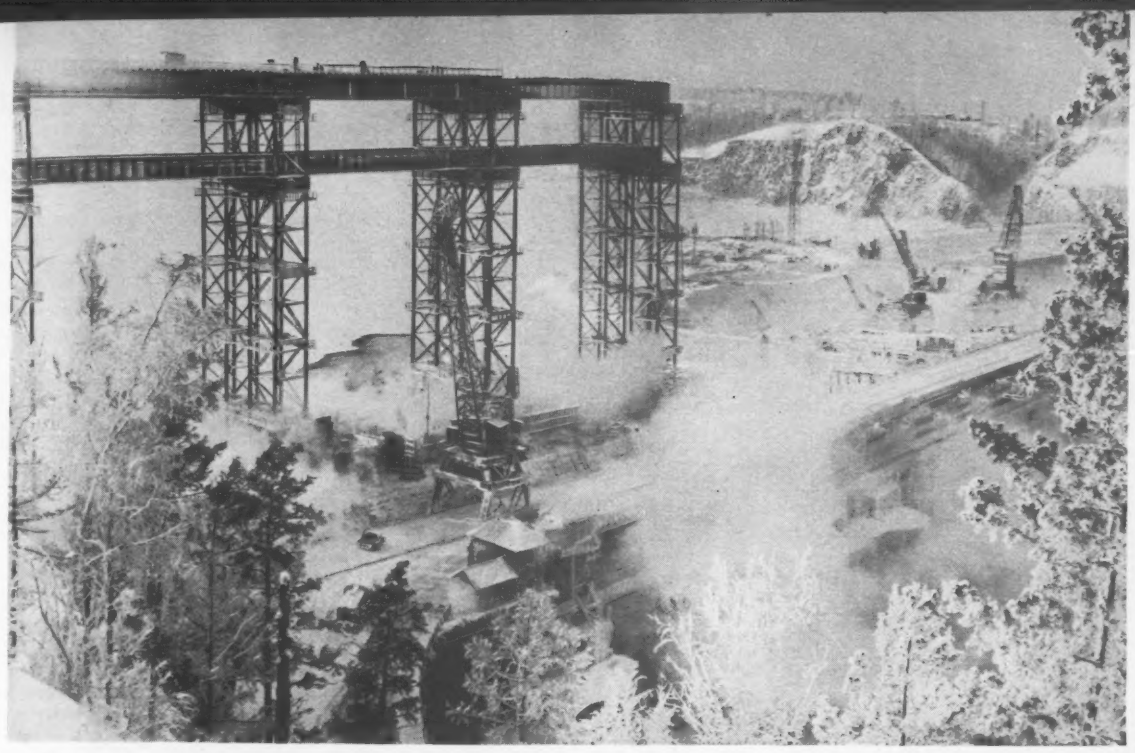
U. S. Steel Will Install Cables for Narrows Bridge

New York City's Triborough Bridge and Tunnel Authority has awarded a contract for cables and suspenders for the $320-million Narrows Bridge between Brooklyn and Staten Island.

U. S. Steel Corp., New York City, will erect the bridge's cables and suspenders on a $56,896,390 contract.

Bethlehem Steel Co., New York City, was the apparent low bidder for erection of the Brooklyn tower and the Staten Island tower of the 6,690-ft suspension bridge. The Bethlehem bid was $46,919,530 (ENR Mar. 3, p. 28).

The Narrows Bridge will span the entrance to New York Harbor. It will have the world's longest suspension span, 4,620 ft.



It's Brrr at Bratsk, But Concreting Goes On

Clouds of steam rise from winter concreting at the Bratsk hydro project in south central Siberia. The Russians say they are concreting at temperatures as low as 50 deg below zero on the 4.5-million-kw development, the world's largest.

The Bratsk hydro station is on the Angara River 432 miles from Baikal Lake. Power required at the construction site is supplied by the Irkutsk hydro plant, also on the Angara. The Soviets state that the Bratsk project is consuming more power than the city of Irkutsk, a regional center to the south.

Six giant cranes are used to lower concrete from the towering work bridge to the construction level. The cranes are said to be equipped with closed circuit television.

Concreting at such frigid temperatures—to 50 below—was also accomplished during construction of the St. Lawrence Power Dam by the Canadians.

Moses Accepts Another Mountain of a Job

It was inevitable that Robert Moses, who heads so many New York City and State agencies dealing with construction, would also play a prominent part in the preparations for the New York World's Fair in 1964, but it was not foreseen that the 71-year-old administrator would be president of the Fair Corporation. He accepted that $100,000 a year post last week.

Mr. Moses will resign his present city posts—Commissioner of Parks, member of the City Planning Commission, chairman of the Slum Clearance Committee and City Construction Coordinator.

But he will continue in his state jobs as chairman of the Council of Parks, of the Long Island Park Commission and of the State Power Authority, the agency that handled the St. Lawrence power development and is currently building the Niagara project. He will also retain the position of chairman of the Triborough Bridge & Tunnel Authority, which has the Throggs Neck and Narrows bridges under construction.

As City Construction Coordinator, Mr. Moses has dealt with the federal and state highway agencies on New York's arterial highway construction. This part of the job will be transferred to his Triborough Bridge & Tunnel Authority.

As president of the New York World's Fair Corp., Mr. Moses will find a number of important questions ready for his attention. There will be a report by W. Earle Andrews, consulting engineer, who was retained under an $80,000 city appropriation to determine the condition of the utilities and pile foundations left on the 1,200 acre site from the 1939 World's Fair, and generally to appraise the site for new construction.

There will also be the question of organization; it has been estimated that as many as 100 different specialist directors will be required to oversee the various aspects of the Fair's development. And there must be an economic study to fix the rental for exhibitors.

This fair will involve a total investment of $500 million as compared to $150 million in 1939. But visitors are expected to spend $5 billion as compared to $1 billion 20 years ago.

Mr. Moses will also have to appoint a committee on design to dream up the architectural ideas that will express the fair's theme, "Peace Through Understanding." And he will have to arrange for an international competition to select a symbol for the fair—like the Sphere and Trylon at the last fair and the Atomium at the recent Brussels fair.

At the 1939 World's Fair, 58 of the 64 nations invited participated, and 23 of them built their own buildings. There are now 82 nations to be invited, and probable comparable increase in the number of foreign buildings that must be built. In addition, there will be the industrial exhibit buildings and U.S. federal and state structures to be decided on. All of these various buildings will have their own architects and engineers, but the Fair Corporation will have to approve them.

This was a modern hotel in Agidir, Morocco, but it proved . . .

Too Easy Prey for a Quake

Showing no evidence of the basic essential of earthquake-resistant design—continuous vertical members to which floors and roof are firmly anchored—the relatively new Hotel Saada in Agidir, Morocco, became a death trap when it collapsed during the earthquake of Feb. 29.

Other buildings in this Atlantic Coast port and resort city of 40,000 population were equally ill-prepared to counter lateral forces; 80% of them were destroyed.

In terms of completeness of destruction and loss of life, the Agidir quake exceeds any since Tokyo in 1923. Nearly 5,000 dead have been accounted for. The quake's seismological intensity, on the other hand, was moderate, said to be about 6 on a scale of 10. Reports suggest, however, that it was of shallow focus and that its epicenter was quite near the city.

Meanwhile, boiling seas two miles off Agidir and changing sea depths brought speculation that an underground volcano was forming.

The earthquake—two shocks about an hour apart—was followed by a tidal wave that engulfed the low-lying port section on the north, causing many deaths by drowning. The remainder of the city is on hills to the south, which merge into the foothills of the Atlas Mountains some 20 miles further away.

Agidir had no history of severe earthquakes, so that its previous development failed to take their possibility into account. In the complete rebuilding of the city, such a possibility can no longer be overlooked. Morocco plans to spend $100 million on reconstruction.

Code Promotes Modern Methods

Philadelphia's revised building code, now in preliminary draft, will reduce construction costs while retaining structural and fire safety features.

The new code promotes major advances in design methods, construction techniques and building materials, continuing a trend toward use of performance criteria rather than specifications. Modernizing features of the new code include:

- Authorization of plastic design in steel in accordance with AISC recommendations. Plastic analysis, however, will be generally limited to two-story structures and to beams and girders in structures over two stories.
- Adoption of the American Standards Association Safety Code for Building Construction.
- Provision for greater use of plastic building materials.
- Reduction of live-load requirements in design of upper stories in one- and two-story family dwellings.
- Liberalization of fire protection requirements for one-story commercial and industrial buildings. Unlimited floor area will be permitted in these buildings, provided they meet other safety requirements.

The new code should become effective about one year after review by architects, engineers, contractors, and other interested groups and approval by the City Council, according to Leo Goldstein, staff engineer of the Department of Licenses and Inspections.

Henry Eitzen of North Hills, Pa., compiled the revised code.

Railroads Tes

Prestressed reinforced concrete crossties will be tested under traffic on two railroads in the South.

Seaboard Airline Railroad installed a quarter-mile test section of the ties on its main line track near Tampa, in time for officially opening the line to traffic this week. The other test section, also ¼ mile long, on the main line of the Atlantic Coast Line, near Benson, N. C., is scheduled to be completed early in April.

The same type of crosstie, designated "Tie E," will be used at both locations. It is the fifth in a series of experimental designs developed under the direction of G. M. Magee, director of engineering research for the Association of American Railroads.

The ties are cast in a special machine developed by the American Concrete Crosstie Corp. of Florida. Installation in both cases is by railroad crews.

The history of conventionally reinforced concrete ties has not been an overwhelming success. The new tie is prestressed to prevent transverse cracking under load. It is made with air-entrained concrete to reduce damage from freezing and thawing. Moreover, it can be spaced 30 in. c-c, compared with a 20 in. c-c spacing normally used for timber ties.

About 530 ties will be used in each test section. They are 8 ft 6 in. long by 7 in. deep and weigh about 540 lb.

The outer 2 ft 9 in. of each tie has a 12-in. bearing surface tapering to a 9-in. width at the top.

The central 3-ft portion is wedge-shaped with a bearing surface on the ballast of only 2 in.

This reduction in bearing is designed to eliminate "center binding," which results when the ballast supporting the tie under the rails is pounded and shifted until the tie is supported only at its mid-length. To prevent this condition, the ballast supporting the tie ends of conventional ties must be repeatedly tamped.

The bottom surface of the tie is slightly concave, which helps hold the supporting ballast in place.

The ties are prestressed by four ⅛-in. uncoated, stress-relieved, seven-wire strands with a maximum ultimate strength of 250,000 psi and a 75% initial prestress of 197,500 psi. The concrete contains portland cement, Florida sand, granite coarse aggregate, water and an air entraining agent. Minimum compressive strength is specified to be 4,000 psi at the time of initial prestress and 6,000 psi at 28 days.

Although complete cost figures are not yet available, a mile-long section of continuous welded rail with the prestressed concrete ties is expected to cost

Concrete Crossties

about $2,000 more than a similar section constructed with wood ties. This figure does not take into account the factors of service life and reduced maintenance costs.

Both test sections use continuous welded rails—130-lb rail at the site near Benson and 115-lb rail near Tampa. They are fastened to the ties with a specially developed spring clip. Tie plates 5 in. wide are supported by either a plywood or a polyethylene plastic pad, to absorb impact and provide electrical insulation for track circuits. The complete assembly of track hardware is secured by two ¾-in. heat-treated bolts. They are inserted thread down into a recessed pocket on the underside of the tie. Each bolt exerts a 10,000-lb clamping force which eliminates the need for installing rail anchors.

The American Concrete Crosstie Corp.'s tie-making machine is designed for mass production. It will produce 1,000 crossties per day. In just 26 seconds it feeds, measures and cuts prestressing cable, then places the cable in a specially developed form while it is under a tension of 81,000 lb. This load is then transferred to a portable pallet, which casts and vibrates high-strength concrete around the cable to form the tie. It then ejects the finished product onto waiting conveyor belts.

Death of L. C. Urquhart Ends Varied Career

Leonard Church Urquhart, who died March 4 in Orange, N. J., at the age of 73, had been a professor of civil engineering, designer of military construction, a consulting engineer and the author of such long-established and well-known books as the "Civil Engineers Handbook" and "Design of Concrete Structures."

A 1909 graduate of Cornell University, he was professor of civil engineering there from 1911 until 1941, except for a period of service as an Army Engineer lieutenant in the first World War. It was during his teaching days that he wrote the first editions of his books. The latest revisions of both books were published in 1958.

At the beginning of the war he resigned from Cornell to become chief of the engineering division of the Office of Chief Engineers, U. S. Army, with the rank of colonel. He served until 1946, when he was transferred to Honolulu to become chief of the engineering division of the Army Engineer district there. In 1949 Colonel Urquhart resigned from the Army to become a member of the consulting firm of Porter, Urquhart, McCreary & O'Brien, Newark, N. J.

Around the World . . .

• **Gracious living**—Mass production has come to the outhouse. An aluminum outhouse was announced by Alcoa as an experiment to find new markets for the metal. Originally conceived for public parks and forests, the "Autumn Brown" outhouse has drawn "amazing response" from farmers, says the company. A 6½ ft by 5½ ft model costs $300.

• **Tunnel for D. C.**—Singstad & Baillie, New York consultants, will design a six-lane, 1,250-ft-long vehicular tunnel at Lincoln Memorial, Washington, D. C., for the National Park Service. Estimated cost is $13 million. No appropriation has yet been made for construction.

• **Greek hydropower**—The Development Loan Fund has approved a $30-million loan to the Greek Public Power Corp., enabling it to complete plans for an $82-million hydroelectric project on the Acheloos River in western Greece. It will consist of a 540-ft high concrete-arch high dam and four, 1,000-kw units with provision for a fifth unit at a later stage. U. S. firms will design and build the project.

• **Import competition**—Look for U. S. manufacturers of ceramic tile to work hard this year to promote their products. They will try to offset the growing sales of imported tile. In 1959, 20% of the market went to imported tile; U. S. manufacturers are anxious to keep the tide from turning into a flood.

• **Different cements differ**—Strength-producing qualities of cement from different sources vary considerably, according to a series of tests being made by the Joint Research Laboratory of the National Sand and Gravel Association and the National Ready Mixed Concrete Association. Preliminary tests also appear to indicate variations in cements in different shipments from the same source.

• **Antitrust complaint**—An independent contractor has filed a $2-million damage suit against seven California locals of the plasterers union and the Contracting Plasterers Association of Southern California. It claims a labor contract between the defendants violated the state antitrust law by establishing wages and working conditions for contractors not members of the association.

• **Voice building**—Groundwork for 93 antennas and 400 antenna towers will begin early this year in a triangular area surrounding Greenville, N. C. The structures will form a $25-million shortwave broadcasting center for the Voice of America.

• **Bumper-to-bumper**—The Long Island Expressway now is the second busiest traffic artery in the New York metropolitan area; average daily traffic is 120,616 vehicles. Most heavily traveled is the Triborough Bridge, at 129,053 vehicles per day.

• **Code is constitutional**—The Supreme Court has ruled against several Los Angeles building owners protesting a city action ordering the demolition of 30 timber buildings. The court upheld the city's right to enforce its building code without further proof that the condemned structures are public nuisances.

• **Pier planned**—New York City may build a giant pier on the Hudson River. Cost would be between $30 million and $40 million.

• **The way to run a railroad**—Syria began construction of a 145-mile railroad that will link Aleppo with the seaport of Latakia — without knowing definitely where the $45 million will come from to pay for it. The Soviet Union, Belgium and West Germany have offered aid.

• **First terminal bid**—Low bid for the terminal structure at Dulles International Airport outside Washington, D. C. (ENR Feb. 4, p. 24) comes from Corbetta Construction Co., New York City, at $4.43 million. Later bids will cover interior work, curtain walls and a control tower.

• **Static statistics**—The AFL-CIO wants Congress to compel businessmen to give statistical information to the U. S. Department of Labor. Members, critical of productivity studies issued by the department, accused industry of threatening to withhold essential information as a lever to force superficial reports.

• **Reorganization in Mexico**—A presidential decree will shake up the organizational structure of the National Division of Highways in preparation for a large highway program in the country.

Biggest activated sludge plant for industry treats pulp mill wastes.

New Plant Aids Potomac Cleanup

Trial operations are under way now at a Maryland industrial waste treatment plant that is expected to contribute materially to cleaning up the Potomac River. It will treat mainly wastes from a pulp mill of the West Virginia Pulp & Paper Co., Luke, Md.

The new installation is an activated sludge plant, biggest of that type to be devoted mainly to pulping wastes. It has a design capacity of 21 mgd. The biggest up to now for pulp-mill wastes was built a few years ago in Covington, Va., for the same paper company (ENR Dec. 2, 1954, p. 30). The older plant had an original capacity of 16 mgd, since expanded to something less than the capacity of the new plant.

Aeration tanks of the new plant will be equipped with turbine aerators. This choice was influenced by the tendency of pulp-mill wastes to clog the fine air openings in the tubes or rings more commonly used for diffusion. With revolving turbine blades relied on to diffuse the air released under the turbines, air openings are big enough to avoid clogging.

Other comparative aspects of turbine aeration reported by the designers some time ago are: higher oxygen transfer efficiencies, with consequent reductions in foaming and air requirements; reduced power requirements; economies in aerator tank construction because walls don't have to provide "roll"; more expensive electrical work because of power transmission to turbines.

About 95% of the wastes handled by the new plant will come from the pulp mill. The remaining volume will be municipal sewage from three towns: Luke and Westernport, Md.; and Piedmont, W. Va.

The new plant is unusual (although not unique) in being a joint public-private undertaking. It is owned and operated by the Upper Potomac River Commission, an agency of the Maryland state government. But the cost is being borne by the paper company.

The arrangement required special legislative action, which the Maryland Assembly took in 1957 when planned expansion of the paper mill at Luke made it necessary to do something about Potomac pollution. The Assembly extended the Commission's powers to include the construction, maintenance and operation of waste-treatment and disposal facilities in the Luke-Westernport area. The Commission and the paper company entered into an agreement in 1958.

The agreement reflects the paper company's importance in the project and provides the security behind the revenue bonds sold to finance the job.

Under the agreement the Commission acquired land and right-of-way, obtained the necessary permits from local and state agencies, undertook construction and agreed to operate and maintain the facilities. The company agreed to reimburse the Commission each year for fixed charges and operating and maintenance expenses, less any money paid by other users.

The only outside payment in view will come from Westernport, and that will be for sewer construction rather than for treatment. The three towns were offered two choices: Free treatment if they furnished their own connecting sewers; or treatment at a charge proportionate to the fixed and operating costs if the Commission built connecting sewers as part of the over-all project. Luke and Piedmont elected the first, Westernport the latter.

The over-all project comprises three main parts: a one-mile trunk sewer from the pulp mill to the treatment plant; the treatment plant itself; and connecting sewers for Westernport.

The trunk sewer is a 54-in. concrete pressure main, laid along the river bed on the Maryland side. It has a gravity-flow capacity of 40 mgd. With pumping, it can handle 65 mgd. The sewer will run full most of the time under a maximum head of 25 ft. George F. Hazelwood Co., Cumberland, Md., completed this part of the job in 1958.

The treatment plant will consist of a 140-ft-dia primary clarifier, four aeration tanks providing 6½-hr aeration, two 140-ft-dia final clarifiers, a 45-ft-dia sludge thickener, and a 430-sq-ft vacuum filter. There are no digesters. The raw sludge will be dewatered and trucked to an abandoned strip mine nearby. The waste to be treated contains in the neighborhood of 263 parts per million (ppm) of five-day biochemical oxygen demand and 290 ppm of suspended solids. Construction of the plant has been virtually completed by Carl E. Widell & Son, Merchantville, N. J.

The Westernport sewers, including interceptors and a pumping station, will go out for bids in mid-April.

Hazen & Sawyer of New York City have served the paper company and the Commission as consulting engineers since the beginning of the project. Gibbs & Hill, Inc., also of New York City, was associated with Hazen & Sawyer in design of the trunk sewer and treatment plant. Richard Hazen is project manager.

Presstite the *one* name to remember for *all* your construction sealing needs

FOR EXAMPLE:

#55 MIL (MILITARY TYPE)

Cold applied, fast curing polysulfide polymer compound for sealing joints in PCC exposed to jet aircraft operations. Resists jet blast, heat, fuel and oil.

#55 HWY (HIGHWAY TYPE)

Modified #55 MIL for sealing joints in PCC highways, non-critical areas of airfields, bridge decks, parking lots, etc.

#67 COLD-APPLIED JOINT & CRACK FILLER

Single component, no heating or mixing. Rubber-based for high flexibility, superior weather resistance.

#99 JFR SEALER

Two-component, jet-blast resistant, cold-applied for sealing sawed and formed joints. Meets Federal Spec. SS-S-170.

#367.1 RUBBER-ASPHALT JOINT SEALER

Hot-pour type for concrete joints. Seals out water, foreign matter. Remains flexible over a wide field of service exposures. Meets Federal Spec. SS-S-164.

#367.9 JFR RUBBER-ASPHALT JOINT SEALER

Specially designed to resist jet aircraft fuel. Meets Federal Spec. SS-S-167.

Concrete joint curing tape. Retains moisture in the concrete essential for curing joints. Protects freshly sawed or formed concrete joints against infiltration of foreign matter, cuts joint cleaning costs to a minimum.

CURING COMPOUNDS

A complete line of membrane-curing compounds including resin-base, wax-base, white-pigmented types. Form watertight film over concrete surface to assure strength and durability.

KAPCO AIR ENTRAINING AGENT

Produces in concrete mix a controlled dispersion of air in form of miscroscopic air bubbles. Also has excellent wetting and dispersement properties. Conforms with A.S.T.M. Designation C260-54.

KAPCO TONGUE AND GROOVE JOINT

Preformed mastic keyed joint. Economical, rigid, waterproof, non-rusting. For highways, streets, airport runways, industrial floors.

KAPCO PREMOLDED ASPHALT EXPANSION JOINT

Asphalt fibre and mineral filler premolded into sheets with asphalt impregnated liners on both sides. A waterproof joint filler.

KAPCO FIBRE EXPANSION JOINT

Non-extruding type of joint filler, fabricated from top-grade fibres, impregnated with waterproof asphalt.

KAPCORK®

Cork granule base in watertight bituminous binder, reinforced with heavy-duty impregnated felt liners. Recovers up to 80% of original thickness after series of three 50% compressions.

#340 KALKTITE® SEWER JOINT COMPOUND

Cold-applied, internal-setting asphalt cement. Produces watertight joint. Economical, resistant to roots and acids . . . Ready-mixed and hot-poured sewer joint compounds also included in this line.

OVER 400 SEALANTS to Match Your Sealing Needs

WRITE Dept. C-10 for literature on any of above. Or use our FREE TECHNICAL SERVICE, describing your problem and area of application. No obligation.

PRESSTITE Sealing Compounds

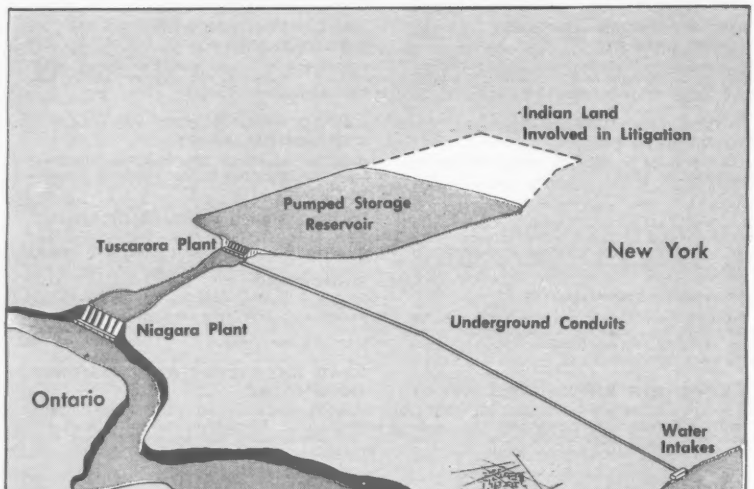
PRESSTITE DIVISION
AMERICAN-MARIETTA COMPANY

K A P

3740 CHOUTEAU AVE. • ST. LOUIS 10, MO.

Twin conduits (under highway) progressed through use of winterized forms.

Schedule of Niagara Power Job



Project at a glance: It crosses City of Niagara Falls, N. Y.

New York State's Niagara Power Project is one of the busiest as well as one of the biggest U. S. construction jobs this winter. Cold weather has forced considerable slowdown, but the schedule is crowding all the contractors too much to permit hibernation.

The end of the year found the $720-million project with all major structures about half completed. But this is no cause for relaxation. The New York State Power Authority is pushing for first power by next Feb. 10.

Despite a January mean temperature of 25.8 F, contractors on the project placed 90,000 cu yd of concrete during the month. Most of it went into the main powerhouse and the conduit intake structures, where the concentrated locations simplified the protection problem. But about 20,000 cu yd were placed in the twin conduits.

Protection of the conduit concrete varies considerably depending on the location. Some requires no protection after stripping.

Concrete placed directly in contact with rock (which includes all parts of the conduits except the roof arches) must be heated to temperatures in the range of 50 to 70 F for placement

Traveling formwork for top of arches is partly enclosed.

Piped hot air warms forms, steel.

Job Forces Fast Pace All Winter

when the mean daily temperature is below 40 F. It must be kept at 50 F or above for 72 hours and above freezing for 11 more days. Before placement of the concrete, the forms and reinforcing steel must be heated to prevent localized freezing of the concrete from loss of heat to frigid metal.

Oil-fired heaters for warming the forms and steel are mounted directly on the form travelers. The travelers are winched along on rails into position for the pour; the forms are set and shrouded in tarpaulins; and hot air from the heater blowers is piped into the enclosure. This, plus fiberboard insulation on the outside of the forms, maintains heat to the required level for 72 hours. Then the forms are stripped. Tarpaulins retain enough hydration heat to prevent freezing for the following 11 days. Top surfaces of the pours are also protected by straw.

The roof arches require somewhat less protection. Temperature requirements are similar to those for wall and floor slab concrete, but the bottom sides of the arches require no protection after stripping. Placing the arches makes closed tunnels of the conduits, and temperatures remain above freezing.

However, the bottom forms of the arches are left in place five or six days—not for heat retention but to let the arch concrete gain strength.

All the conduit contractors are using the same type of forms and travelers, and they are concreting the conduits in sections of equal size. There are some differences among them in number of travelers, however.

After the scaling, drilling and reinforcement rigs are finished, first concrete is placed for the floor slab. Four sections make up the 47-ft slab width. Rails are then mounted on the slabs to support form travelers for the sides and roof.

For the lower half of the 42-ft-high sidewalls, Merritt-Chapman & Scott, pushing the conduit concreting perhaps faster this winter than the other two conduit contractors, uses three 40-ft travelers 40 ft apart. These concrete a 40-ft section each and leave 40-ft open sections between. Advancing simultaneously, they leave the open blocks to be filled in later. When the open sections are filled in, end forms are omitted and the completed sections retain the fresh concrete.

The upper walls and haunch blocks are concreted in a similar manner. However, to maintain the same pace with the roof arches, which are not stripped as soon as the other pours, an extra set of bottom forms is required.

Each of the three covered-conduit contractors has his own concrete plant a short haul from his section of the job.

Although the walls are concreted directly against the sides of the rock excavation, the conduits are designed and built to tolerate some rock movement at top or bottom.

The floor slabs terminate a few inches short of the sides of the excavation and are, therefore, free of direct buckling pressure from the rock in case of slight movement. To prevent transmission of buckling loads to the slab by inward movement of the concrete sidewalls, slab and sidewall are separated by a ⅛-in.-thick sheet of lead. Besides "lubricating" the joint to prevent transfer of horizontal loads, the lead also seals the joint.

The metal is laid down in 2-ft-wide sheets on the slab and the lower wall is concreted directly on top of it. Asphalt emulsion on both sides of the lead discourage reaction with free lime.

(*Turn the page*)

SERVICISED
ZERO-LASTIC JF®

THE ANSWER TO JET FUEL JOINT SEALING PROBLEMS!

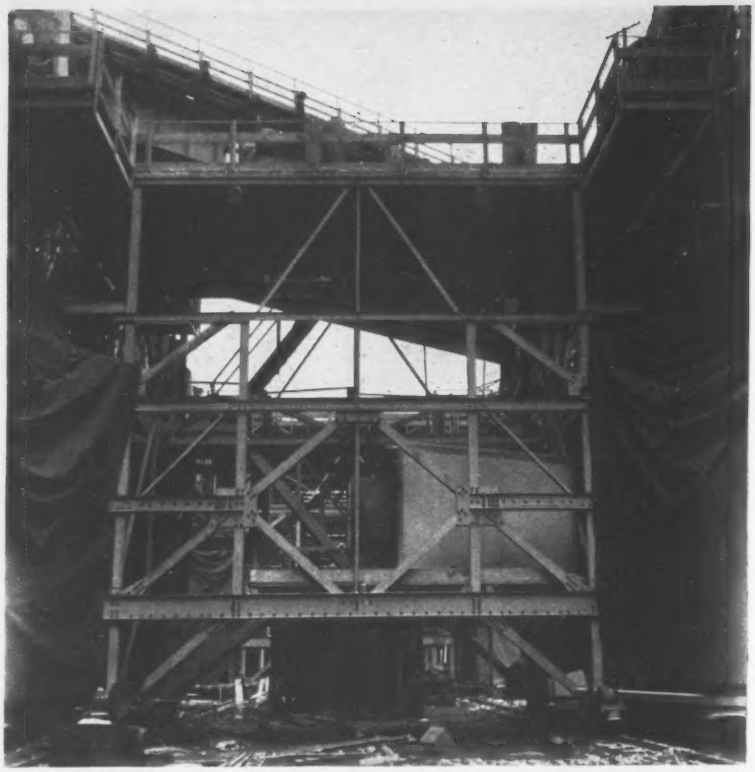
Cold applied ZERO-LASTIC JF is a specially formulated and extremely effective rubberized compound for sealing concrete joints exposed to jet fuel and jet blast. ZERO-LASTIC JF has been widely used on many U.S. Air Force bases as well as municipal projects.

ZERO-LASTIC JF is designed for sealing joints from ¼" to 1" or more wide. It is a two component material that is easy to mix and apply with ordinary pug mill extruder equipment. The material *cures in the joint* to form a resilient, rubber-like seal which has excellent bond to both sides of the concrete. It is suitable for both new construction and maintenance.

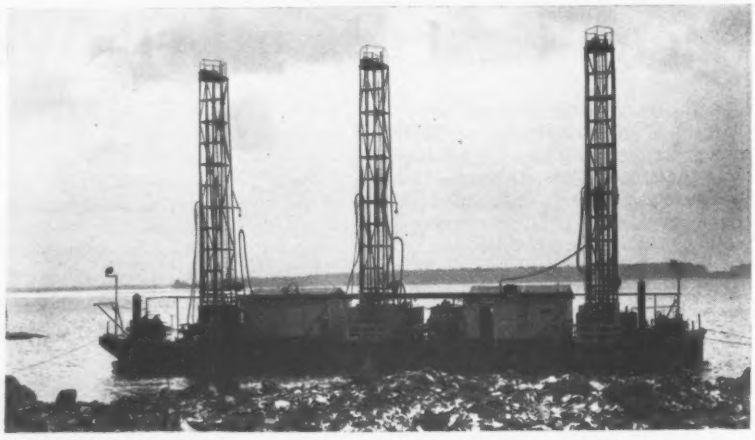
Expansion, contraction, or dummy joints sealed with ZERO-LASTIC JF are protected from infiltration of moisture and other foreign materials, regardless of extreme temperature variations, heavy traffic, or the effects of fuel spillage.

Write for Servicised Products Catalog. Contains complete information on Zero-Lastic JF as well as many other Servicised special purpose joint sealing materials and products for concrete construction.

SERVICISED PRODUCTS
CORPORATION
6051 West 65th Street • Chicago 38, Illinois



FORM TRAVELERS stay in place three days before forms are stripped. Heat is continuously supplied. Thereafter, canvas covers over new concrete retain enough heat.



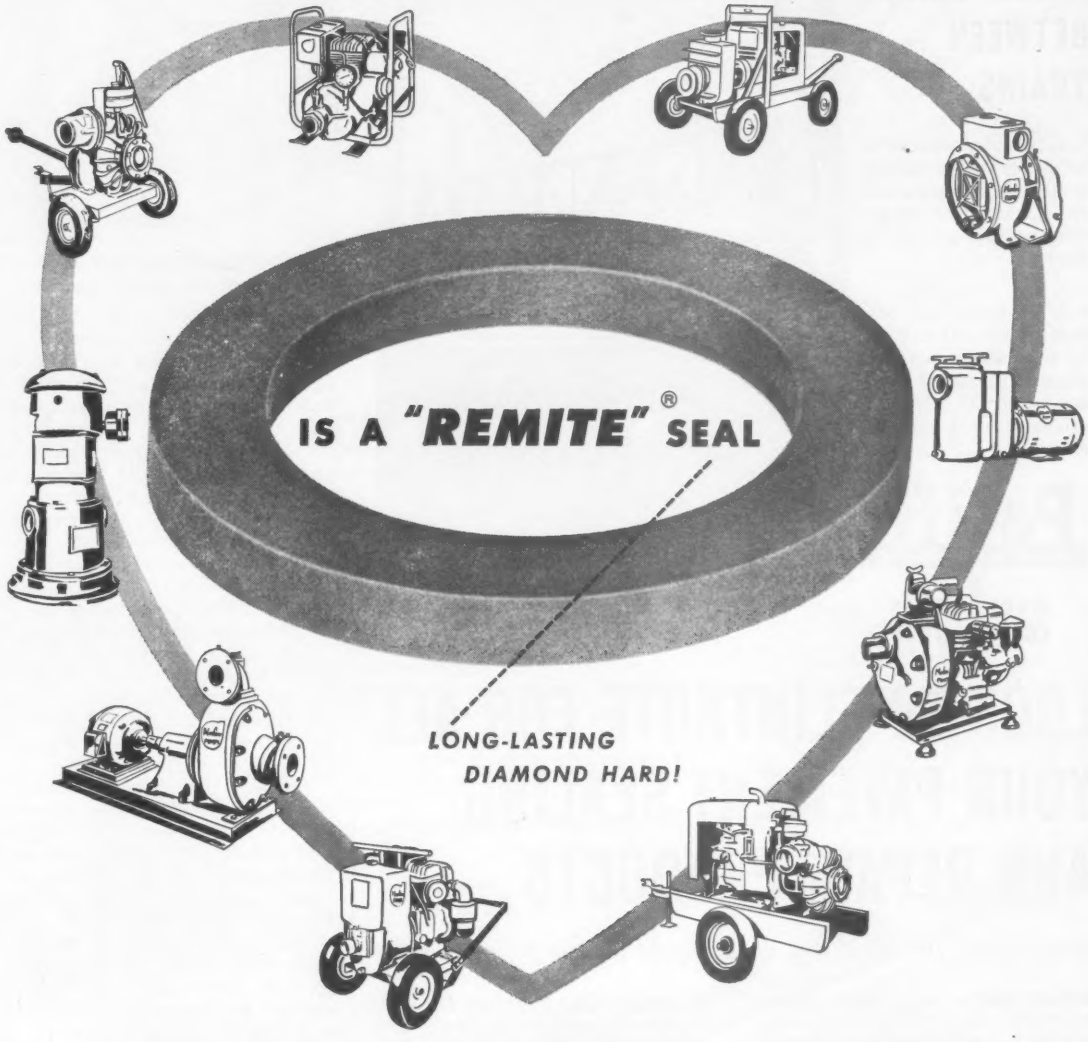
DEEPENING THE RIVER to prevent ice buildups that might block the intakes, drill-barge crew sinks, loads and shoots holes in bottom.

Lateral movement at the top of the walls is permissible because of the roof flexibility. The tops of the conduits are three-hinge arches, and the only effect of a small inward or outward movement of the walls would be a slight raising or lowering of the center hinge.

The roof arch sections are concreted in full-span single pours, thanks to a time-saving design modification suggested by the contractors. The original plan was to concrete a half span, then wait till it could be stripped and coated with mastic at the center hinge before concreting the other half. This requirement was changed when the contractors proposed that the entire span be concreted in a single pour with a metal plate at midspan to preserve the required structural separation at the center hinge.

Despite the advanced status of the Niagara Power Project and the sale so far of $520 million of bonds to finance most of the job, there is still a small cloud on its horizon. The undertaking

THE *HEART* OF EVERY DEPENDABLE *MARLOW* PUMP...



Yes, Marlow's mechanical shaft seal is designed to keep the liquid where it belongs—inside the pump casing and not in the bearings or on the floor! A unique material, called "Remite," that was developed in the Research Laboratories of Bell & Gossett, helps make this possible. Remite is a material that is almost as hard as a diamond and is compatible with almost every liquid. Both of these properties help to make Marlow's mechanical shaft seal virtually leakproof and one of the finest available anywhere in the world.

This premium seal is standard equipment on all of Marlow's self-priming centrifugal and end-suction centrifugal pumps. This is just one of many reasons why Marlows offer a dependable and reliable solution to every pumping problem. Because it is self-lubricating, routine maintenance is almost completely eliminated.

Today, research by Marlow and Bell & Gossett is constantly striving to make a good product even better to serve you with ever increased efficiency.

9-627

Marlow PUMPS ®

MARLOW PUMPS

DIVISION OF BELL & GOSSETT COMPANY

MIDLAND PARK, NEW JERSEY

Morton Grove, Illinois • Longview, Texas

A NEW BRIDGE BETWEEN TRAINS

Union Pacific Railroad faced the job of replacing a mainline bridge without disrupting traffic. Maximum time between scheduled trains was only four hours.

P. C. & R. planning and equipment set each 247 foot, 250 ton truss between trains considerably reducing the hazard and expense of erecting a bridge in the conventional manner.

Pacific
CRANE & RIGGING CO.
MECHANICAL CONSTRUCTORS

6855 E. Rosecrans Ave., Paramount, Calif., NEvada 6-9213

LOOK TO FLINTKOTE FOR ALL YOUR PAVEMENT SEALING AND REPAIR PRODUCTS...

Send today for technical data sheets on the following:

● **FLINTSEAL***—hot poured rubber asphalt compound—tough, long lasting . . . bonds perfectly through cycles of slab expansion and contraction.

● **H-100**—Super effective, polymer type joint sealer (cold applied)—oil and chemical resistant; sets quickly, bonds perfectly at extreme temperatures. *No flow*—even in vertical joints. Ideal for sealing bridges.

● **FLINTAR***—Coal Tar Pitch Emulsion (brush or squeegee applied)—doubles the life of bituminous pavement by protecting against moisture infiltration and oxidation. Beautifies too!

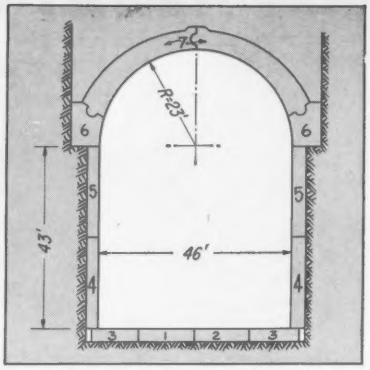
● **FLINTCRETE†**—Exciting new polysulfide/epoxy cement bonding compound. In several formulations for pavement restoration and repair.

Also ask about Flintkote's hot poured and Cold-applied Jet Fuel Resistant Joint Sealers. Complete pavement restoration specifications are available. Write: The Flintkote Company, P. O. Box 157, Whippany, New Jersey.

*Reg. U. S. Pat. Off.
†A trademark of The Flintkote Company

FLINTKOTE

Manufacturer of diversified products for home and industry



CONCRETING SEQUENCE for conduits is same for all three conduit contractors.

is not completely in the clear so far as a federal license is concerned.

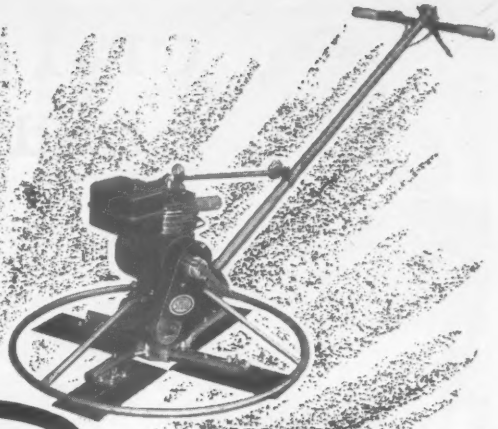
The license issued by the Federal Power Commission early in 1958 is—technically at least—in some question now. It was based on a pumped-storage reservoir of 60,000 acre-ft, which would give the entire project a firm power capacity of 1.8 million kilowatts. The Power Authority is proceeding now with the prospect of a smaller reservoir and a firm power capacity of 1.7 million kw. Tuscarora Indian resistance to acquisition by the Power Authority of 1,383 acres of tribal land forced the change.

The matter is before the U.S. Supreme Court now. If the Power Authority is denied the right to acquire the Tuscarora land, the FPC will then have to consider licensing the project for the smaller capacity.

The legal questions are having no effect on powerhouse design or construction. Installed capacity will still total 2.19 million kw—1,950,000 kw in Niagara Generating Plant, the main powerhouse, and 240,000 kw in the Tuscarora Pump Generating Plant.

The major contractors on the Niagara Power Project are Merritt-Chapman & Scott, with a $170.4-million contract for Niagara Generating Plant and a $66.2-million contract for river intakes and a section of the covered conduits: Edward Balf Co., Savin Bros., Inc., and D. W. Winkelman Co., Inc., a joint venture with a $37.4-million contract for a section of the conduits; Gull Contracting Co. and L. G. Defelice & Son, a joint venture with a $32.7-million contract for a section of the conduits; Channel Constructors (a joint venture of Peter Kiewit, Morrison-Knudsen, Walsh and Perini), with a $33.6-million contract for open-channel waterways, Tuscarora Reservoir and aggregate production for all contractors; Tuscarora Contractors (a joint venture of Arundel Corp., L. E. Dixon Co. and Hunkin-Conkey Construction Co.), with a $40.2-million contract for Tuscarora Pump-Generating Plant.

VIBRATORS



ROTO-TROWELS

STOW

for DEPENDABLE CONCRETE CONSTRUCTION EQUIPMENT

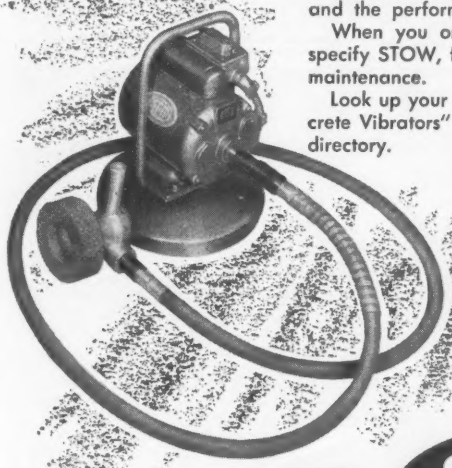
Into each unit of STOW-built construction equipment goes years of research in the field, months of testing new designs on the job, plus 80 years of STOW engineering know-how. STOW maintains close contact with contractors, keeping abreast of their current problems . . . incorporating their needs into the STOW line of construction equipment.

Every day more contractors rely on STOW Concrete Construction Equipment for the dependable service and the performance today's contracts demand.

When you order concrete construction equipment, specify STOW, for top performance *without* expensive maintenance.

Look up your nearest STOW distributor under "Concrete Vibrators" in the yellow section of the telephone directory.

GRINDERS



VIBRATING SCREEDS

STOW

MAIL THIS COUPON TODAY!

Stow Manufacturing Co. Dept. I-1
19 Shear Street, Binghamton, N. Y.

I'm interested in the STOW LINE of Concrete Construction Equipment. Send complete catalog and name of nearest distributor. I am particularly interested in _____

Name _____ Title _____

Company _____

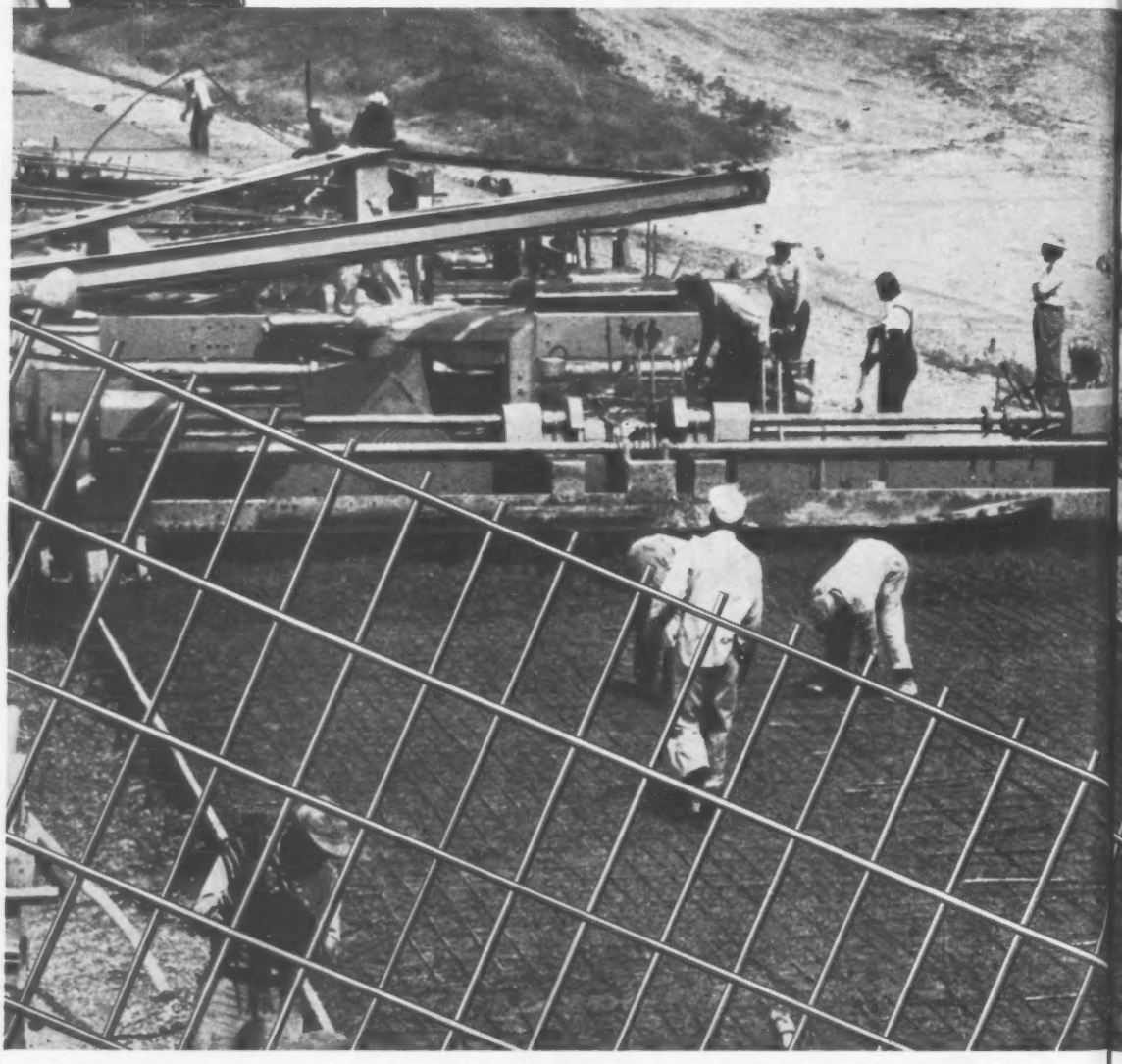
Street _____

City _____ State _____

CF&I Steel Products and the Construction

For years, CF&I has been a prime supplier of steel and steel products for the construction industry. Continual research, one of the meanings behind our Corporate Image, has resulted in new and improved steel products for construction use.

CF&I has also earned a reputation among construction men for product dependability...swift,

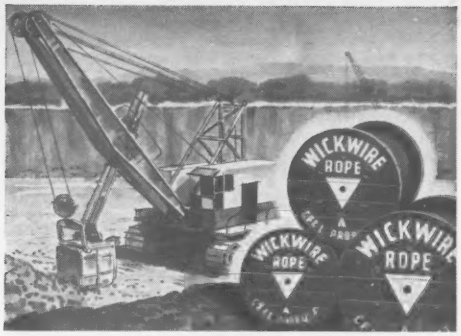


WELDED WIRE FABRIC: CF&I-Clinton Welded Wire Fabric gives concrete extra strength and resistance to cracking, and spreads load stresses over a wide surface. Available in all standard gages and furnished in rolls or mats for quick installation.

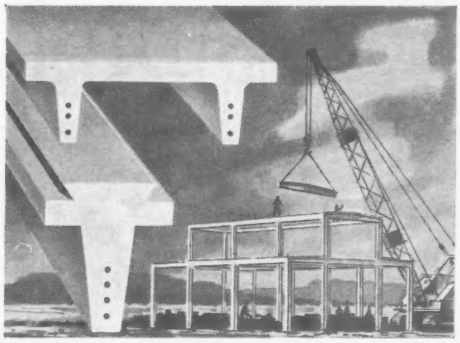
Industry

reliable delivery through distributors and warehouses... and in-field service to our customers.

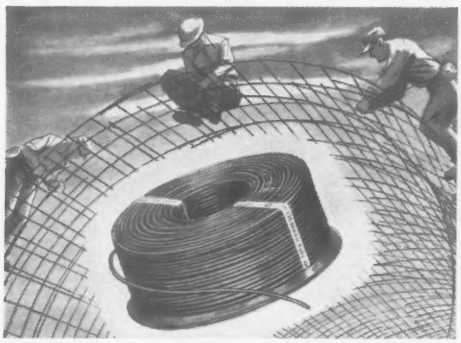
Always it is the aim of CF&I to help America's progress with the American-made steel products shown on these pages, along with a complete line of other steel items for the Construction Industry.



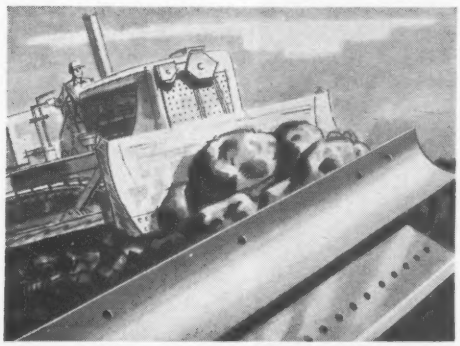
WIRE ROPE: CF&I-Wickwire Wire Rope is made in a broad range of grades and constructions, each designed to resist the punishment inflicted by different operations—abrasion, bending, crushing, or a combination of these wear factors. A complete line of Wire Rope Slings is also available.



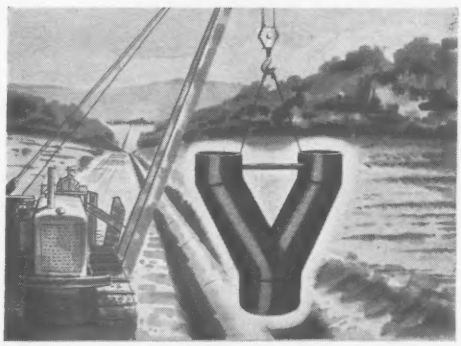
PRESTRESSED CONCRETE STRAND: Stress relieved after stranding, CF&I 7-wire Strand is flexible and easy to use. It is made to ASTM Specification A-416 and is ideal for pretensioning applications. CF&I also offers quick delivery on Prestressed Concrete Wire made to ASTM Specification A-421.



TIE WIRE: CF&I Cal-Tie Wire can't kink, tangle, snag or scratch, assuring maximum safety and economy in tying steel. That's because it is furnished for use in a handy belt dispenser that protects against hazards of loose coil ends. The wire comes in 16 gage. Reinforcing Bars are available in sizes No. 2 to No. 11.



GRADER BLADES: Scientifically designed, CF&I Blades and other Cutting Edges are carefully made of special analysis steel to eliminate hard or soft spots. This assures extra-long service. Wide selection of lengths, widths, thicknesses and hole spacings, flat or curved, beveled or squared edges.



STEEL PLATE PRODUCTS: CF&I's Claymont Plant fabricates many types of structural steel plate products—including weldments for underground water viaducts, base and bearing plates for bridges, expansion joints for penstocks, side seal plates for guide gates on dams, and many others.

For complete information on all products, ask for Catalog G-104, "CF&I Steel Products for the Construction Industry."

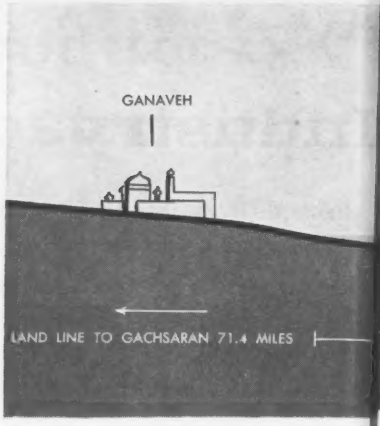
7471

THE COLORADO FUEL AND IRON CORPORATION

DENVER • OAKLAND • NEW YORK

CF&I STEEL

Sidebooms lift 4,000-ft pipe string onto rollers.



In order to get an oil line from i

Pipeline

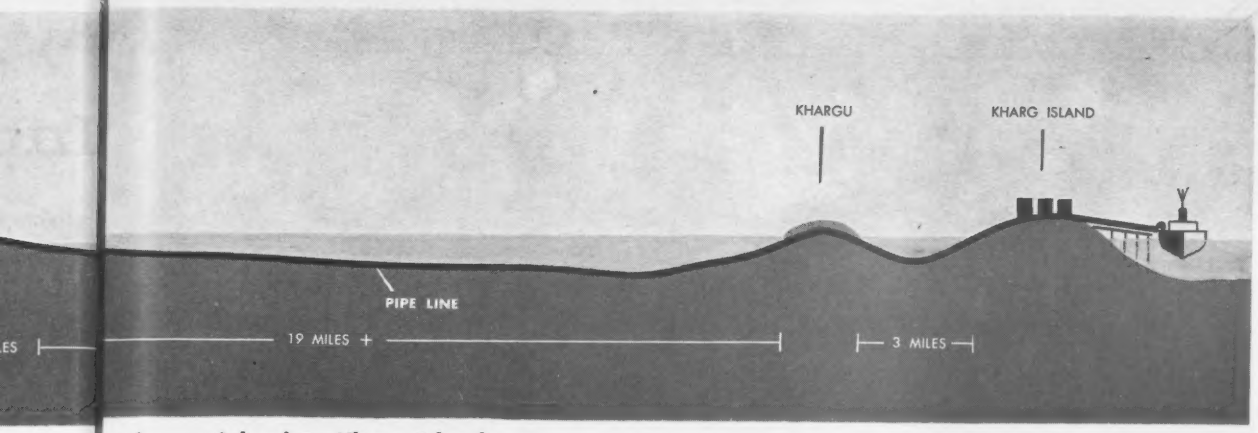
The world's longest undewater pipeline pull has just been completed. Two sections of 30-in.-dia pipe—one of them 19 miles long—now lie on the bottom of the Persian Gulf in water up to 160 ft deep.

The lines were installed by the continuous pull or "friction transposition method" in which pipe lengths are assembled on land into long strings that are pulled into the water and dragged across the bottom to their destination.

The marine sections are the major part of a 25-mile pipeline that runs from Ganaweh on the Iranian coast to Kharg Island in the Persian Gulf. In its length, the line crosses 19 miles of water, the two-mile width of Khargu Island and then another three-mile stretch of water. It then goes a mile overland on Kharg Island to a coastal tank farm.

The Ganaweh-Kharg Island line is part of a 100-mile pipeline system that will daily carry 350,000 barrels of crude petroleum from wells at Gach Saran, 71 miles inland, directly to tankers in the gulf. The oil will move solely by gravity. Gach Saran is high in the Iranian Plateau and, while the pipeline crosses both mountains and desert in its course to the sea, the route is generally downhill. Pumps will not be needed. In addition to having a record-breaking marine section, the line will be one of the largest and longest gravity-fed oil lines in the world.

The overland sections of the line were installed in a fairly routine fashion and without much difficulty. The submarine parts, however, posed some real problems. Under the deep waters of the gulf there are strong and erratic tidal currents. On the surface, 10-ft waves are not uncommon.



ranian mainland to Kharg Island . . .

ls Pulled 19 Miles on Sea Bottom

Before any construction was begun, extensive submarine surveys were made. Water depths were checked; soil studies were made of the bottom; tides and subsurface currents were measured and charted. In all, six possible routes were considered.

When the most desirable alignment was selected, the contractor set up an operations base on Khargu Island from which the pull was to be made in both directions. Included at the base were recreational and first aid buildings, housing, offices, a radio control tower and a two-mile-long work area.

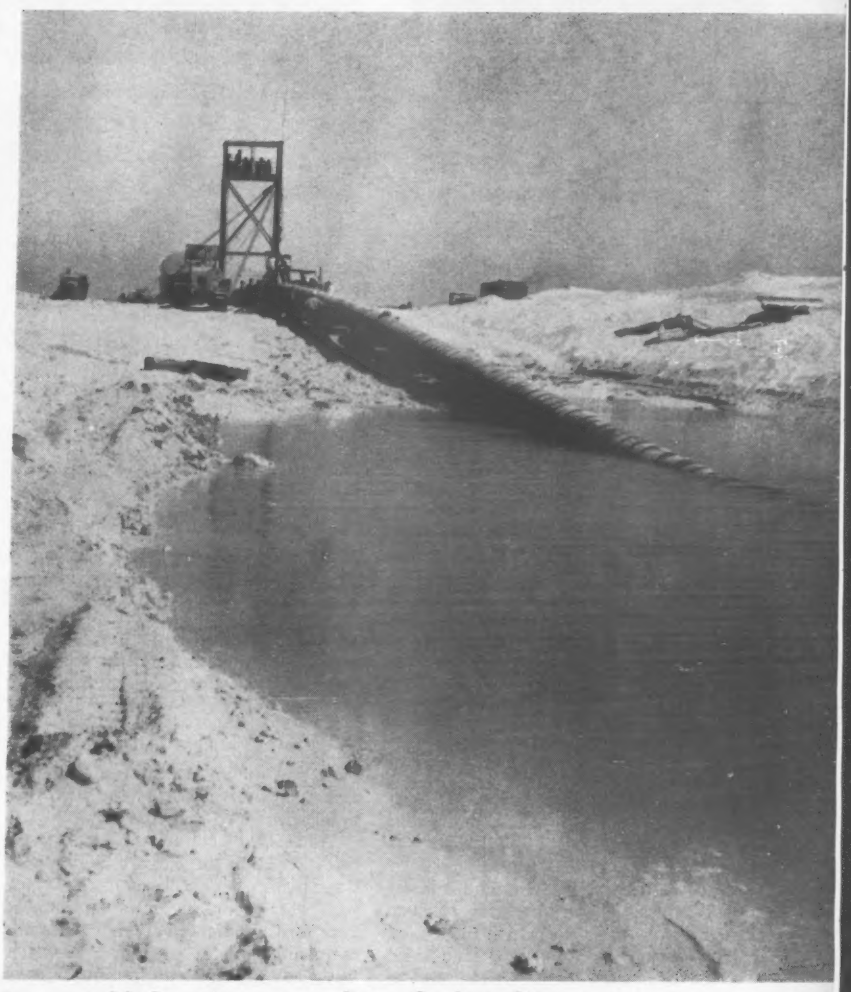
Materials and equipment were also brought in, most of it from the U.S. Everything came by barge.

The pipe was delivered in 26-ft lengths. These were set in the work area in long lines on timbers placed on the ground at right angles to the pipe. The joints between the pipes were then welded to form continuous strings. For the 19-mile pull, the strings were 4,000 ft long; for the three-mile pull they were 4,400 ft.

The joints were then X-rayed with portable machines. Special rigs cleaned each string of pipes and applied a protective primer coat. In quick succession other rigs gave the pipe two alternate layers of hot bitumen and fiberglass. The pipe was then encased in a coal-tar-saturated felt.

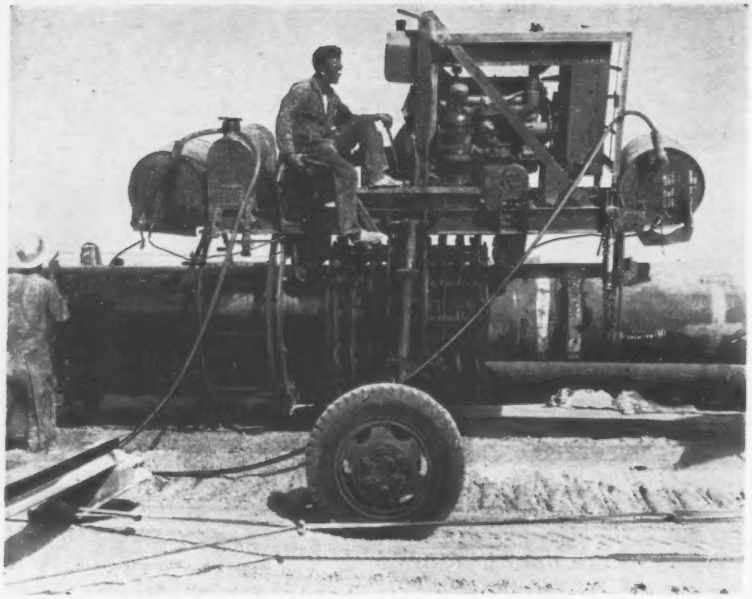
Next, forms were wrapped around the pipe and a 2½-in. jacket of concrete, reinforced with 4 x 4 No. 9 wire mesh was cast. This concrete serves two purposes: It protects the waterproofing from abrasion during the pulling operation; and it provides a negative buoyancy.

The buoyancy of the pipe is critical. On land, each foot of uncoated pipe weighs about 158 lb. Yet, because its



An assembled section moves down the launching way.

WELDING JOINS two 30-in.-dia pipes. All welds were X-rayed before being wrapped.



CLEANING AND PAINTING the assembled pipe is done by this one piece of conventional line traveling equipment. It was brought to Khargu from the U. S.

HOT BITUMEN and fiberglass goes on next. Later, pipe is wrapped in bitumen-soaked felt, then given a 2½-in.-thick concrete jacket.

leading end is capped, its displacement is great enough to make it float. The concrete casing corrects this. It pushes the weight of the pipe to about 445 lb per ft, but provides a negative buoyancy in water of only 4 lb per ft.

While the initial concrete casings were curing, the contractor built launching inclines at the shore lines on either side of Khargu; he also cast concrete anchors on the mainland and on Kharg Island.

The method for pulling the pipe to the mainland was the same as that used to pull the pipe to Kharg Island.

The towing barge started at the mainland and moved toward Kharg Island. As it moved, it paid out behind it a system of anchor cables that were connected to the anchor block on land. About a mile off the island shore the barge stopped and cast its side anchors. The pulling cable from the barge was then brought to the island, reeved through a sheave on a buoyant block cabled to the leading pipe, and returned to a deadend at the pulling winch. The lead pipe string, meanwhile, had been lifted by side boom tractors to rubber tired rollers set at 40-ft intervals. The barge, held in place by the anchor cables running to the mainland 18 miles away, began its pull. The time from start to finish of a 4,000-ft pull was about eight hours.

To maintain alignment and control of the pipe, it was necessary to keep each string under tension at all times. This was accomplished by a land-based winch connected to the trailing end of the string by a hold-back block. The winch exerted a reverse pull of from 5 to 10 tons. Dynamometers were used to check tension and their readings were constantly transmitted to both the barge and the control tower.

When the trailing end of the first string neared the water, the pulling was stopped. Another 4,000-ft string was then positioned behind the first one, and the joint between the two was welded, wrapped and concreted.

While the connection was being made on land, the barge brought in its side anchors, reeled in its anchor lines, paid out its pulling lines and moved backward another 4,000 ft towards the mainland. Once re-anchored, the barge was ready to repeat the pulling process. In this manner, both the 19-mile section and the three-mile section of pipe were dragged across the bottom of the Persian Gulf.

Throughout the entire operation, the alignment of the pulling barge was checked by theodolites mounted both in the 86-ft-high control tower on Khargu and in the 112-ft-high mainland tower. The position of the barge was checked by tellurometers.

The Ganaweh-Kharg Island pipeline was installed by International Marine Constructors, C. A. (Inmarco) an affiliate of Collins Construction Co. of Port Lavanca, Tex. The work was done for the Iranian Oil Exploration and Producing Co. It was supervised by S. V. (Sammy) Collins, owner of Collins Construction Co. and president of Inmarco.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

Easiest Way to do Hardest Pumping

It doesn't matter where you pump or what you pump, the Homelite Diaphragm Pump is the Time-saver and Money-saver for continuous heavy-duty work. Weighs only 120 pounds, complete with Homelite quick-starting engine . . . less than ½ the weight of most diaphragm pumps of equal capacity. You set it up anyplace, fast. You do your pumping, fast. Handles anything . . . water, sand, mud, muck, solids. Manual throttle control adjusts engine speed for full 5,000 G.P.H. capacity pumping or handling small seepage flow . . . gives greater fuel economy. Suction lift of 28 feet is guaranteed. You get total heads up to 50 feet, including friction. Flapper valves have special self-cleaning action to prevent clogging. For longer wear, gears operating in oil are totally enclosed. For steady footing, pump is mounted on vibration-proof spring skids. See it in action today.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
PUMPS GENERATORS • BLOWERS CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC., 1103 RIVERDALE AVE., PORT CHESTER, N.Y.
In Canada — Terry Machinery Co., Ltd.

Alcoa's plain and fancy ways

Whether you're planning an industrial building, school, shopping or recreation center, warehouse, or any other structure . . . beautify it with Alcoa* Alumalure, *without adding premium cost!* Select from 11 handsome hues and natural aluminum finish.

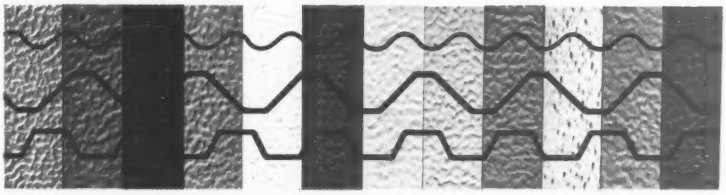
Alcoa Aluminum is lightweight, strong, corrosion resistant. You can figure on it being easier to handle, going up much faster. It comes in sheets as large as 48 in. wide, 30 ft long, in corrugated, V-beam, ribbed or flat sheet. And you can promise your client that he's going to have *no* maintenance costs. Alumalure, a tough, baked enamel finish on aluminum, already has passed the 15-year mark in a rigorous test of durability!

Why not check into Alumalure now? Your local Alcoa sales office has samples. Or get color swatches and full technical data by writing: Aluminum Company of America, 821-B Alcoa Building, Pittsburgh 19, Pennsylvania.

**Trademarks of Aluminum Company of America*

Building site, courtesy George A. Fuller Co., New York, N. Y.

to dress a building on a budget



Turn page for nearest source of supply!

ALCOA
ALUMALURE
MADE BY ALCOA

For exciting drama watch "Alcoa Presents" every Tuesday, ABC-TV, and the Emmy Award winning "Alcoa Theatre" alternate Mondays, NBC-TV

you can obtain **Alcoa Alumalure**
and natural finish aluminum sheet through these dependable jobbers:

ATLANTA
Southern Alum. Finishing Corp.
1581 Huber St., N. W.
Atlanta, Georgia

J. M. Tull Metal & Supply Co., Inc.
285 Marietta St., N. W.
Atlanta 3, Georgia

Birmingham (Atlanta)
Hinkle Supply Company, Inc.
2923 5th Avenue, S.
Birmingham, Alabama

Charlotte (Atlanta)
Edgcomb Steel Co.
527 Atando Avenue
Charlotte 6, North Carolina

BOSTON
Edgcomb Steel of New England, Inc.
P.O. Box 437
Nashua, New Hampshire

New England Erecting Co., Inc.
321 Commonwealth Rd.
Cochituate, Massachusetts

BUFFALO
Whitehead Metals, Inc.
2128 Elmwood Avenue
Buffalo 7, New York

CHICAGO
Central Steel & Wire Co.
P. O. Box 5310-A
Chicago 80, Illinois

CINCINNATI
Williams & Co., Inc.
3231 Fredonia Avenue
Cincinnati 29, Ohio

Dayton (Cincinnati)
Aluminum Materials, Inc.
2663 S. Dixie Avenue
Dayton 9, Ohio

Evansville (Cincinnati)
Ohio Valley Hardware Co., Inc.
1300 Pennsylvania Expressway, W.
Evansville, Indiana

Louisville (Cincinnati)
Perry Lumber Co.
246 Walton Avenue
Lexington, Kentucky

Columbus (Cincinnati)
Williams & Co., Inc.
900 Williams Avenue
Columbus 8, Ohio

CLEVELAND
Williams & Co., Inc.
3700 Perkins Avenue
Cleveland 14, Ohio

DALLAS
Dealers Building Materials Co.
1303 Foch Street
Ft. Worth, Texas

HARTFORD
H. A. Leed Co.
Hamden 14, Connecticut

Livonia (Detroit)
Wayne Fence & Supply Co.
27605 Schoolcraft St.
Livonia, (Detroit) Michigan

Denver (Kansas City)
Metal Goods Corp.
4343 Holly Street
Denver 5, Colorado

LOS ANGELES
Olympic Steel Prod. Co.
3304 Temple Street
Los Angeles 26, California

George D. Widman Co.
17823 Evelyn Avenue
Gardena, California

Ogden (Los Angeles)
Superior Engineering Sales Co.
3185 Lincoln Avenue
Ogden, Utah

Phoenix (Los Angeles)
Garland Steel Co.
1500 S. 7th Street
Phoenix, Arizona

MILWAUKEE
Wisconsin Bridge & Iron Co.
5023 N. 35th Street
Milwaukee 9, Wisconsin

NEWARK
Chris Andersen Materials Corp.
577 Sayre Avenue
Perth Amboy, New Jersey

Beers Steel Bldg. Corp.
413 High Street
Elizabeth, New Jersey

NEW YORK
Long Island Tinsmith Supply Co.
111-12 Jamaica Street
New York, New York

Whitehead Metals, Inc.
303 W. 10th Street
New York 14, New York

PHILADELPHIA
Edgcomb Steel Co.
D Street below Erie Avenue
Philadelphia 34, Pennsylvania

Richmond (Philadelphia)
Roof Engineering Corp.
715 Matoka Street
Norfolk, Virginia

Allentown (Philadelphia)
Bethlehem Aluminum, Inc.
920 Cherokee Street
Bethlehem, Pennsylvania

PITTSBURGH
Williams & Co., Inc.
901 Pennsylvania Avenue
Pittsburgh 33, Pennsylvania

ST. LOUIS
Mississippi Valley Structural Steel
3117 Big Bend Boulevard
St. Louis 17, Missouri

Memphis (St. Louis)
Arkansas Foundry
1434 E. 6th Street
Little Rock, Arkansas

SAN FRANCISCO
Aluminum Prod. Hawaii, Ltd.
669 Sheridan Street
Honolulu 14, Hawaii

The Brookman Co.
2833 3rd Street
San Francisco 7, California

SEATTLE
Northland Pipe & Supply Co.
P. O. Box 2119
Anchorage, Alaska

Pacific Metal Co.
4150 1st Avenue, S.
Seattle 4, Washington

Portland (Seattle)
Portland Wire & Iron Works
4644 S. E. 17th Avenue
Portland 2, Oregon

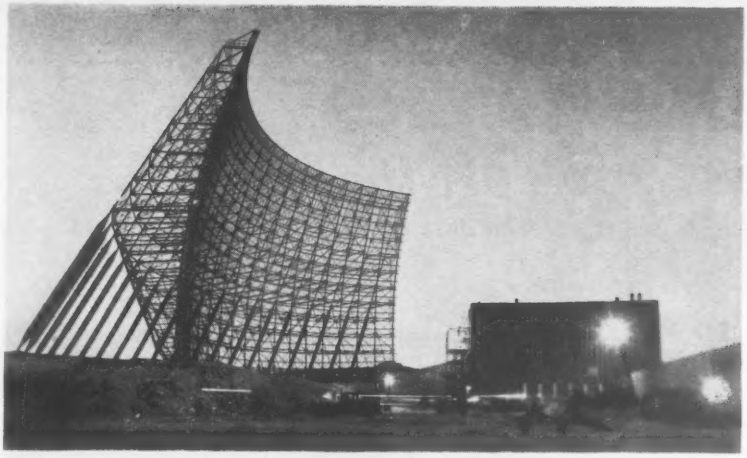
Portland (Seattle)
Pacific Metal Co.
303 N. W. Park Avenue
Portland 9, Oregon

TOLEDO
Williams & Co., Inc.
946 Kane Street
Toledo 12, Ohio

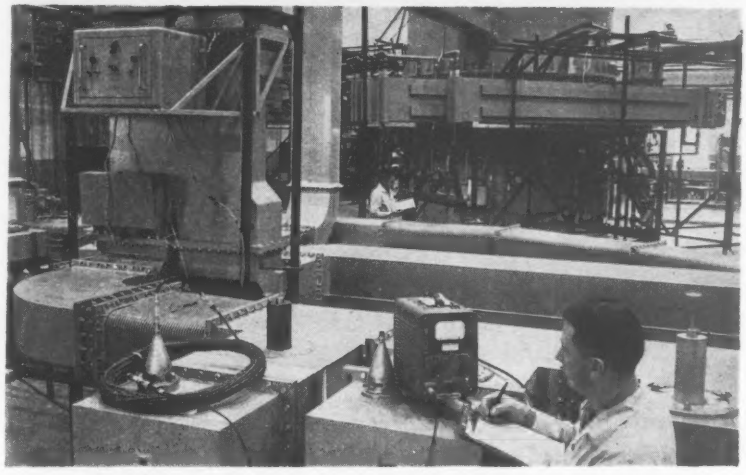
add lasting beauty to your metal-clad buildings . . .
with Alumalure
made by

ALCOA ALUMINUM
ALUMINUM COMPANY OF AMERICA

Your Guide to the Best in Aluminum Value



BMEWS Ear Relays Pulses . . .



. . . For Fantastic Probing Gear

The remarkable structures required for a Ballistic Missile Early Warning System (BMEWS) station owe their novel character to the even more remarkable equipment they house. Inside BMEWS is, therefore, chapter two of the ballistic missile story. (For chapter one, see ENR Dec. 24, 1959, p. 26).

Now undergoing test in General Electric Co.'s heavy military electronics department in Syracuse, N. Y., the equipment constitutes a fantastic array of space-probing gadgetry. It will send out powerful pulses of radio frequency energy to bounce off incoming missiles and return a signal of their direction and destination.

The first equipment, 290 cabinets of it plus ten control consoles, will be installed in the Greenland station near Thule. A duplicate set is destined for a station near Fairbanks, Alaska, while different, shorter range equipment will be used in the third station, to be located in northeast England. The total cost of BMEWS, when completed, is estimated at $800 million.

To the civil engineer the four giant reflector antennas, 400 ft long and 165 ft high, are the feature of the Thule installation, along with the novel buildings and connecting passageways, which are completely insulated against high energy waves and the Arctic cold. But to the electronics engineer these structures are merely a part of the gear. The real feature to him is a combination transmitter-receiver unit, known as a high-speed scanning switch. Two switches are located in each scanner building directly in front of each of the reflectors. They send out, many times a second, bursts of radio frequency energy at a power level measured in multi-million watts. After each burst, the transmitting side of the unit is shut-off so that the receiving side can detect any tiny echo (power level at only milli-micro-microwatts) reflected from the missile, which may be 3,500 miles away.

This complete transmitting-receiving cycle occurs many times per second. In the picture (lower left), a scanning switch, 16¼ ft high and 21 ft in dia, is being tested in the large circular tank in the background.

The energy the unit uses is supplied by 9-ft-high Klystron tubes mounted in power amplifier cabinets in the transmitter buildings some distance away. It is brought to the scanner buildings in a connecting passageway through banks of aluminum waveguides, which resemble conventional air ducts although their joints and interior surfaces are machined and polished to mirror-like smoothness. They total 21 miles in length and weigh 1,500 tons.

The waveguides "pipe" the energy to feedhorns, which may be likened to nozzles, that direct it against the huge reflectors in an upper and lower bank and at the precise angle for the required coverage of the polar sky. There are 176 of these feedhorns pointing out of each scanner building through plastic windows over which hot air is blown to prevent ice formation.

In addition to scanning switches, waveguides, feedhorns and Klystron tubes, innumerable other pieces of apparatus are required to complete the complex installation. There are duplexers, shown being tested in the foreground of the photo, which protect the super sensitive receiver circuits while the transmitter is radiating; there is a modulator, which furnishes the high voltage to the transmitter in short pulses and controls the transmitter's off-time; there is a video-amplifier, which feeds the signals to the viewing scope where they can be spotted visually; and there is a multiplicity of computer apparatus, which converts the signal information into usable form almost instantly.

In all, an estimated 13,500 tons of equipment is required to be installed in the BMEWS structures to make this surveillance radar system fully operative. The General Electric Co. is responsible for designing, producing and placing it in operation under a sub-contract with the Radio Corporation of America, prime contractor for the U. S. Air Force.

G. E., in turn, had 450 subcontractors to aid it in development and production, including General Bronze, Inc., Valley Stream, N. Y., for the scanning switch; Carrier Corp., Syracuse, N. Y. for the de-icing units; D. S. Kennedy & Co., Cohasset, Mass., for the reflector antennas; Continental Electronics Manufacturing Co., Dallas, for the transmitter; and Eitel-McCullough, San Bruno, Calif., and Varian Associates, Palo Alto, Calif., for the Klystron tubes.

First of a Series

TIRE TALKS

On the record—off the road

Leading U. S. Rubber scientists and engineers answer questions on recent advances in off-the-road tires for which they were in a large measure responsible

Q What can be done to overcome the severe rock cutting and penetration conditions that exist here on the Mesabi range and that have resulted in so much early tire damage?

Mr. C. F. Engstrom, manager of off-road tire development. He and his staff of engineers have been instrumental in introducing many highly technical advances and innovations in specialized U. S. Royal tires.

A This is a problem that exists with most users of off-road tires. U. S. Rubber has developed an exclusive method of meeting this problem. Its S.R.T. —*S*teel *R*einforced *T*read—puts a virtually impenetrable mat between the tread and shoulder areas and the nylon cord body. This mat consists of several thick layers of tread rubber containing hundreds of thousands of short lengths of brass coated, hardened steel filaments. These are closely interlaced, yet individually insulated to stop water seepage and rusting that may follow cuts or penetrations through the tread—often experienced in off-road operations.

DO YOU HAVE A QUESTION? U. S. Royal development engineers have custom-engineered many tires and special constructions to meet specific conditions or to overcome high tire or shut-down costs on specialized operations. You are invited to consult with Mr. Engstrom if you are seeking a solution to an individual tire operating problem. Write to him at

U.S. ROYAL SAFETY 1ST TRUCK TIRES

United States Rubber

1230 Avenue of the Americas, New York 20, New York

Man-Made Landslides Are Safer

A slide threatened the highway. So the slide was man-made to get it over with.

Peter W. Kero, contractor of Carlstadt, N. J., did the job for the safety of travelers on New Jersey's Rt. 611 in Delaware Water Gap.

He moved in a gasoline-powered pump that pulled water from the river to the road level. There, a diesel-powered jet pump shot it 50 ft up in the mountainside to wash down the threatened slide material.

An 800-gpm stream pushed by 280-psi pressure shot into the mountainside, loosening boulders as heavy as 50 tons, washing them down to road level with soil and rock.

Altogether there were 50,000 cu yd of material washed down and cleared away to remove the slide hazard. Moretrench Corp. jet-well pumps were used.

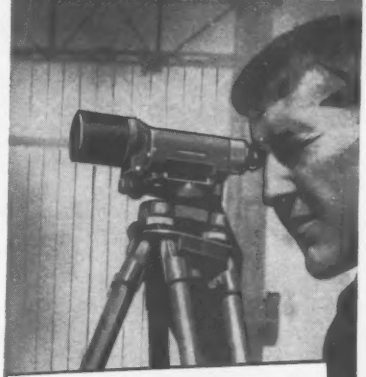
Bidders Must Guarantee Boilers

Beginning March 1, contractors began submitting a guarantee of boiler-plant efficiency with bids on contracts for furnishing and installing heating plants for New York State buildings. The new policy announced by the Department of Public Works works this way:

Predicted fuel cost for 10 years will be added to initial installation cost to determine the bid price for awarding the contract. The State will compute fuel cost at current prices from the "Guaranteed Gross Efficiency" the bidder claims for his plant.

After installation, the State will test the heating plant by a standard ASME procedure. If the unit fails to operate at the efficiency claimed for it, the contractor will get time to make corrections before a final test. If the unit still fails to meet its guaranteed efficiency, the State will withhold liquidated damages from contract payments. Liquidated damages will equal the difference between 10-year fuel cost computed at plant efficiency determined by test and the estimated 10-year fuel cost in the bid price.

WHERE THERE'S A
BIG JOB
THERE IS A
KERN
INSTRUMENT



WORLD FAMOUS
precision surveying instruments... compact, rugged construction... fast, effortless operation. More reliable results in less time.

KERN'S NK3
precise level

Was used at Gloucester Anchorage of new Walt Whitman Bridge then under construction over Delaware River. (Modjeski & Masters, Ammann & Whitney, Consultants to the Delaware Bridge Authority of Pa. and N. J.)

DESIGNED FOR HIGHEST PRECISION LEVELING

- Functional, down-to-fundamentals design—only 4½ lbs. (8 lbs. with carrying case).
- Coincidence level and fine tilt screw.
- Readings at a glance—level and rod may be read simultaneously through 30x Telescope.
- Mean leveling accuracy under normal conditions ± .008 ft. per mile.
- Kern AR coated optics produce substantial increase in brilliance and contrast of image.

Write for Brochure NK 527-1

PROMPT, RELIABLE SERVICE
FACTORY TRAINED PERSONNEL
Kern and Only Kern Offers You the Latest Designs of Dr. Henry Wild

Kern SWISS
The FINEST in SURVEYING EQUIPMENT
KERN INSTRUMENTS INC.
120 Grand St., White Plains, N. Y.

Span Those WIDE OPEN SPACES

... with Revolutionary Behlen DUBL-PANL™ Roof-Ceiling System

Wide Clear Span

Flat Roofs, 40 to 350 ft.
Arched Roof, up to 1,000 ft.
Cantilever Overhang, up to 200 ft.

New Roof Performance

Aluminized steel gives up to three times the life of ordinary built-up roofs, and with only minimum maintenance.

New Roof Economy

Far lighter in weight than conventional truss roofs.

Three-In-One Erection

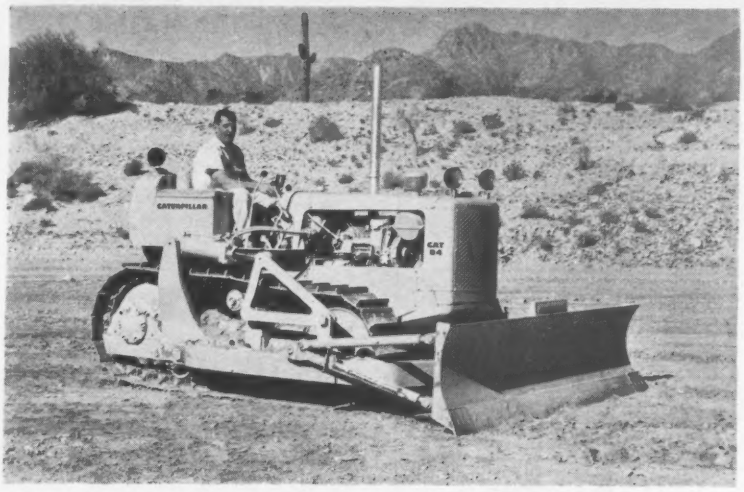
Fast, economical to erect. Imagine, one complete spanning unit, only one installation, gives you (1) roof, (2) truss, and (3) ceiling with the same ease as erecting structurals only in conventional construction.

Conquer space with an exciting new concept in clear span building — Behlen DUBL-PANL. Gives heavy beam strength by two stressed panel-chords, with a minimum of diagonal bracing, transferring vertical loads into axial stresses. Proven by test. Pittsburgh Testing Lab. supervised full scale test on 200 ft. span.

DUBL-PANL Roof-Ceiling used with all types of walls: Behlen panel, masonry and curtain. Also, take advantage of DUBL-PANL construction for high walls; resists wind loads in any desired heights. Easy, economical to insulate. Steel panels, 12-20 gauge, aluminized or galvanized. Same principles as custom-made Behlen Frameless Metal Buildings widely publicized by national magazines. Build with modern, versatile Behlen DUBL-PANL.

Write today for complete, technical information:

Behlen Manufacturing Company
Dept. ER-3
Columbus, Nebr.



Improved 52-hp Crawler Tractor

A model of Caterpillar Tractor Co.'s D4 tractor, Series C, is rated at 52 drawbar horsepower. The tractor is said to have 25% more lugging ability than previous models, a new starting system, and greater ground clearance. The spur gear transmission has five speeds forward and four in reverse and permits quick forward-reverse shifting.

The D4 is powered by a four-cylinder engine that delivers 65 flywheel horsepower at 1,600 rpm. It develops 13,000-lb maximum drawbar pull in first gear with a standard transmission. With the optional transmission, the unit develops a maximum of 14,600 lb drawbar pull. A No. 143 hydraulic control is mounted on the tractor.

A gasoline starting engine with a manual off-track recoil starter is standard on the new machine. The No. 4S, 4A and 4 Tool Bar bulldozers are available. CATERPILLAR TRACTOR CO., PEORIA, ILL.

Chemicals Stop Water Seepage

After months of field tests and job applications, a chemical compound for reducing water seepage through soil has been formally introduced. The material, called SS-13, is merely poured into the water of a canal or pond, the maker says. He reports that the treatment cuts seepage losses as much as 80%.

The product consists of resinous polymers and heavy atoms in a carrier of diesel fuel and is readily mixed in water. It is economical where water is valued at $3.50 or more per acre-ft, the manufacturer says.

When a pond or canal is treated with SS-13, water seeping out distributes the substance in the soil. The additive increases the ionic attraction of the soil particles for water, according to the manufacturer. This enlarges the hygroscopic envelope of water around each particle and decreases the voids through which free water can move, and thereby retarding the flow of water through the soil.

Bureau of Reclamation, in cooperation with the Salt River Water Users Association, ran tests on a 4,000-ft section of irrigation canal.

First, natural seepage was measured with the section dammed and ponded with clear water. Next, the chemical was applied by adding 670 ppm to the water and allowing it to stand for 72 hours. Finally, with the test section refilled with clear water, seepage was again measured. A reduction of 59% was reported.

Subsequent measurements, after the canal had been back in service for six months and a year, showed reductions of 60% and 68% respectively. During this period the upper half of the canal sides were found to have been dry 50% of the time.

The maker says the chemical is nontoxic. He reports successful treatment of stock watering ponds and golf course ponds. It does not affect plant growth and is suitable for use in sewage ponds, he says.

A 10-lb sample of soil is required before quoting. SS-13 SALES CO., 716 SOUTH 7TH ST., PHOENIX, ARIZ.

New Sealant Bonds Many Materials, Textures

"Thorospan" is a sealant and calking compound for glass, metals, concrete, masonry, porcelain, rubber and wood.

It has a synthetic rubber base and is reported to be applicable for calking, sealing and glazing where waterproofing is required and where expansion and contraction are important factors. It is sold in two grades: pourable for self-leveling, fast application on horizontal work; and No-Flow, a heavier consistency for vertical or overhead applications.

The sealant holds materials with varying surface densities and textures, according to the manufacturer. It can be applied by hand, power calking guns, putty knives or trowels. Thorospan is reported to be non-sagging and to give permanent resilience over a wide temperature range. STANDARD DRY WALL PRODUCTS, INC., NEW EAGLE, PA.

Pumps Are Designed for Water Supply Systems

A line of "Split Case Pumps" is said to be especially adaptable for water supply systems, air conditioning and heating systems and as booster pumps. Called type AY, the pumps have mechanical seals and are designed for leakproof operation.

The pumps need practically no maintenance and operate with minimum vibration and noise, says the manufacturer. They are available in discharge sizes up to 6 in., with capacities ranging up to 2,000 gpm and heads up to 400 ft. They are driven by motors with a speed of 1750 rpm or 3450 rpm. Bulletin AY 1850 is available upon request. WEIL PUMP COMPANY, 1530 N. FREMONT AVE., CHICAGO 22, ILL.

Integrator Gives Reading For Dry Flow Meters

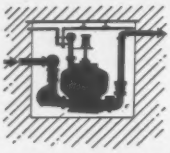
A new simplified integrator automatically multiplies belt travel by belt loading to give direct reading of the cumulative weight passing over the weighing section of a flow meter for bulk dry materials.

Seven-digit readings are provided directly in pounds, tons and long tons, and does not need multipliers other than ciphers.

The explosion-proof linear response integrator is mounted in a dust-proof steel case and is adaptable for remote operation. B-I-F INDUSTRIES, INC., 345 HARRIS AVE., PROVIDENCE 1, R. I.

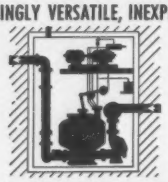
Which sewage lift station is best for your job?

TOPS IN DEPENDABILITY AND SAFETY



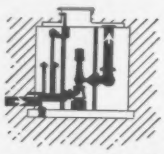
Concrete or steel underground station with Shone® Type S pneumatic ejector, mechanically controlled (warranted 25 years). Remote air supply. Nothing electrical; maintenance free, operates even under water. For municipalities and large subdivisions.

SURPRISINGLY VERSATILE, INEXPENSIVE



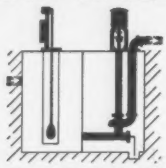
Shone® Type SAC station, underground in concrete vault. Mechanically controlled ejector (warranted 25 years) has its own compressor. Frequently less costly than package stations. Finds use everywhere.

PACKAGE STATION



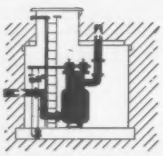
Quality underground station with vertical, short-coupled (Series 6260), dry pit centrifugal pumps. Quality design and equipment give good service life at nominal cost. For small permanent stations, growing areas.

LOW FIRST COST—EASY INSTALLATION



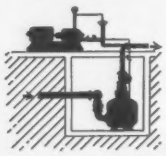
Two-compartment steel basin with centrifugal vertical wet pit pump. Pumps are not submerged; motors protected from flooding. Low first cost; fast installation. For buildings, small growing subdivisions.

ULTIMATE IN PACKAGE DESIGN



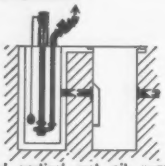
Package underground station with Expelsor® pneumatic ejector, electrode controlled. Sanitary and dependable, low maintenance, easy to service. Recommended for municipal and subdivision applications.

BUILDING TYPE STATION



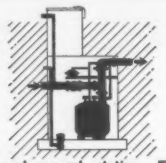
Expelsor® pneumatic ejector station designed for use in buildings. Compressor is on basement floor; ejector on floor below. Sealed installation gives safe, odorless handling of sewage indoors.

SPECIAL PROBLEMS?



Centrifugal vertical wet pit pumps with adjoining settling basin. Good for areas where sand or old sewers create problems. Special pump construction for abrasive or corrosive conditions, industrial wastes.

MAXIMUM RELIABILITY—MINIMUM SPACE



Package underground station. Expelsor® pneumatic ejector has two compartments, duplex compressors and controls. Excellent service accessibility. Especially suited for subdivision and municipal lift stations.

L-5911

The answer depends on the job. Is it to be a temporary station? What about future loads? How much maintenance will it get? What type of power is available? These and many other questions must be weighed carefully and without bias. In making the decision, why not put Yeomans 61 years' experience (59 on underground stations alone) to work? Because Yeomans builds the only complete line of sewage lift stations in the industry, recommendations are impartial and in your best interest. Phone, wire, or write now.

YEOMANS

1999-1 North Ruby Street,
Melrose Park, Illinois

SPECIALISTS IN SEWAGE LIFT STATIONS—THE COMPLETE LINE

New Pipe-Wrapping Tape Combines Butyl and Vinyl

A heavy mastic layer of butyl is combined with a tough outer cover of vinyl in a new laminated pipe-wrapping tape, called Warco tape.

The butyl seals permanently, filling all pits, and also cushions impacts that might otherwise cut or tear the tape, the manufacturer says. The vinyl backing is designed to resist abrasion and punctures from backfilling.

The tape can be applied either by hand or machine. A wide range of thicknesses and widths is available. West American Rubber Co., 410 North Ave. 19, Los Angeles, Calif.

Diaphragm Pump Measures Corrosive Chemicals

A diaphragm-type proportioning pump is designed to accurately meter such chemicals as sulfuric and phosphoric acids, sodium hydroxide and photographic solutions.

The positive-displacement pump is made of corrosion-resistant materials, can be either wall or floor mounted, and draws directly from the shipping container holding the corrosive chemicals.

Complete package comes ready for installation and includes pump, foot valve, connecting hoses and instructions. B-I-F Industries, Inc., 345 Harris Ave., Providence 1, R. I.

Briefs . . .

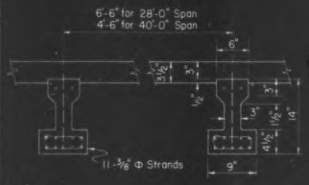
• **Portable heaters**—Gas-fired, infra-red portable heating units produce instant heat at low cost, according to the manufacturer. Three models, ranging from 16,000 to 36,000 Btu rated input, can be used for spot heating, thawing, curing, or drying. Hupp Corp., 1135 Ivanhoe Rd., Cleveland 10, Ohio.

• **Electric vibrator**—A motor-in-head concrete vibrator, Model EV 26, operates on either AC or DC current at 10,000 vibrations per min. Available in 7, 14, and 21-ft lengths, Model EV26 sells for $310 for the 7-ft length. Remington Arms Co., Inc., Bridgeport, Conn.

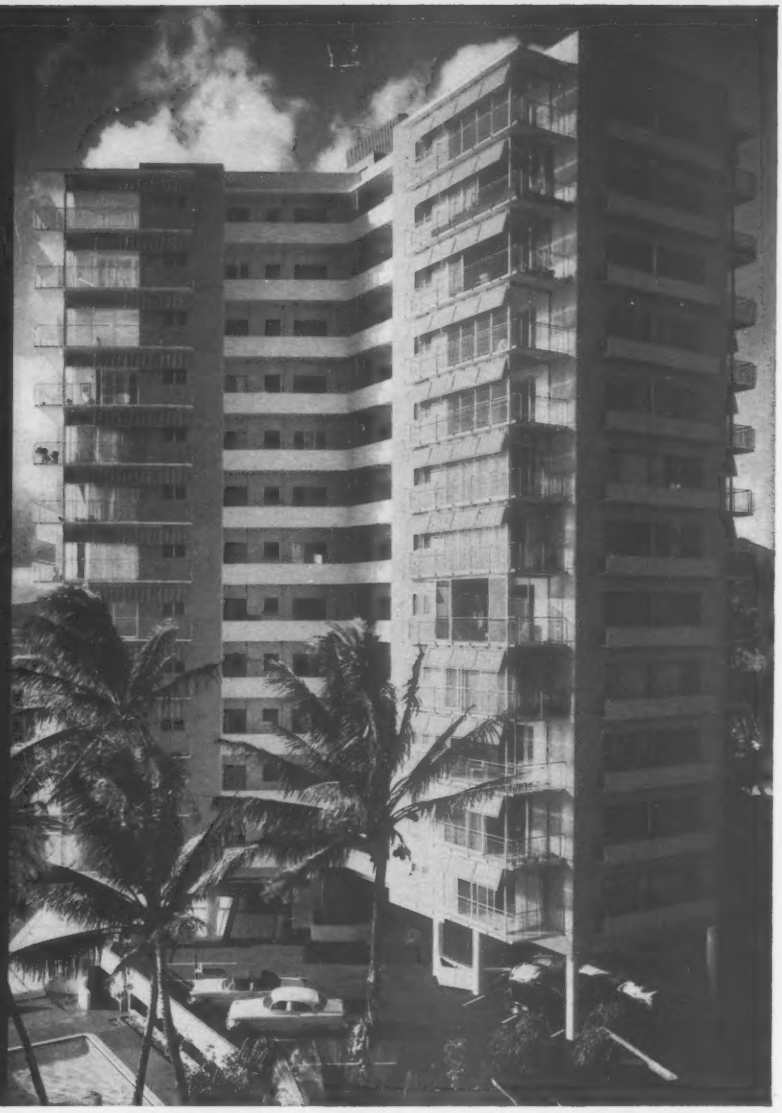
• **Timber joist bridging**—TECO Fas-Lok bridging, 18-gage galvanized steel sections, 1¼ in. wide, eliminate need for nailing. Specially-designed projections make installation quick and easy with a few taps of the hammer, the manufacturer says. Teco Engineering Co., 1319 18th St. N.W., Washington 6, D. C.

Hawaiian Dredging & Construction Co., Ltd., General Contractor
C. W. Winstedt Construction Company, Prestressed Concrete Piles
Concrete Engineering Company, Ltd., Prestressed Concrete I-Joists
Vladimir Ossipoff, Architect
Park & Yee, Structural Engineers

TYPICAL FRAMING,
DIAMOND HEAD APARTMENTS
Total Lineal Ft of I Joists = 15,000'



Prestressed Concrete Piles go way down to raise Hawaii's most beautiful apartments



The new, 12-story Diamond Head Apartments, built at a cost of more than $1,700,000, is a model of beauty, luxury and impressive construction methods.

The structure's seashore site – literally in the shadow of Diamond Head on the Island of Oahu–made for some difficulties during the foundation phase. The refusal depth of the prestressed concrete underpinnings in the unpredictable coral was unknown and could only be discovered by driving. One pile, in fact, broke through a coral shelf and sank out of sight. An excavation was dug until the top of the pile was recovered. Then dowel bars were placed in the top and an additional pile spliced on and driven to refusal – some 70 ft down.

The floor framing throughout is of precast, prestressed concrete I-joists, with poured-in-place slab, as shown in the drawing above. This type of economical framing is rapidly gaining in popularity. One main reason for its economy is that the spacing between joists can be arranged to take standard plywood form sheets, making for extreme simplicity of installation.

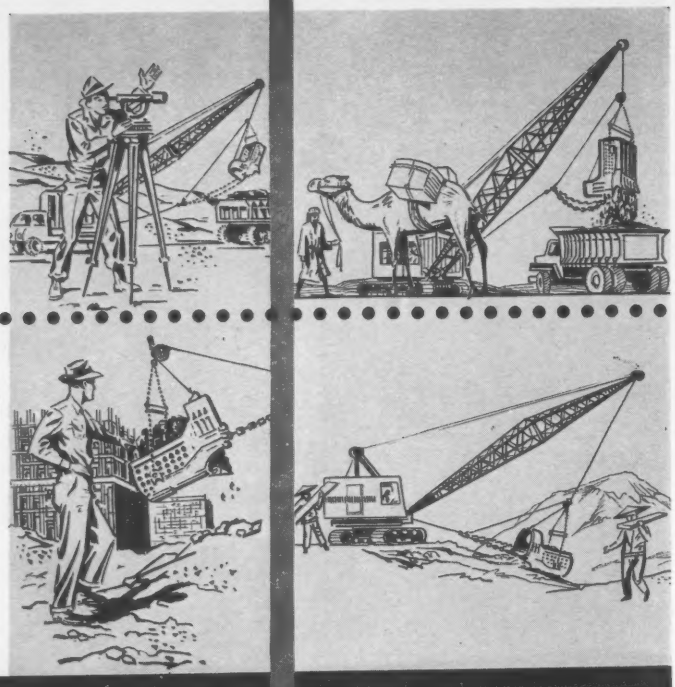
This luxury structure is an outstanding example of prestressed concrete's ever growing acceptance and its ready adaptability to *improvements in the method itself*. Pile splicing is a comparatively new technique that brings still further benefits to this remarkable, economical construction method. Ever-present are prestressed's inherent advantages; great strength, construction speed (members can be fabricated and trucked to the job site with great dispatch), insurance and maintenance benefits and wide design adaptability.

Roebling has long advocated the prestressed method and has manufactured highest quality stress-relieved prestressing strand for fabricators throughout the country. Our knowledge, data and experience, covering every phase of prestressed concrete, are at your disposal. We invite inquiries on whatever aspect may interest you. Write Roebling's Construction Materials Division, Trenton 2, N. J.

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

MATCHED
to the job.....
UNMATCHED
for service



HENDRIX
DRAGLINE BUCKETS

"A Type for Every Digging Purpose"

¼ to 40 CUBIC YARDS

Hendrix Lightweight Dragline Buckets

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

NATO Opens New Headquarters

Personnel of the North Atlantic Treaty Organization have moved into new Paris headquarters building.

Shaped like a huge capital "A", the $9-million structure rises six stories. It measures 604 ft along each leg of the "A", 42 ft across the wings.

A structural steel frame carries ribbed concrete floors with clay tile fillers. French limestone faces the masonry cavity walls.

The cast of prime contractors on the job preserved the international flavor of the project. Companies representing NATO's 15 member nations supplied materials and cooperated in building.

French firms did excavating and concrete casting; Luxembourg supplied structural steel; Italy furnished marble floors; Belgium supplied aluminum windows; U. S. firms installed heating and air-conditioning equipment. There was no general contractor.

Main part of the building contains 1,000 offices and committee rooms. The remaining space houses a bank, post office, movie theater, and assembly room.

Architect and structural engineer was Jean Carlu of France.

Cairo to Study Qattara Hydro

Egypt is planning a new study of an old scheme to generate electricity by channeling sea water into the Qattara Depression in the Western Desert. The key to realization of the project is likely to be whether or not excavation costs can be cut enough.

The 90 x 190-mile depression lies between the Egypt-Libya border and the Nile Delta. At its lowest point it is 436 ft below sea level.

The project would require excavation of a 50-mi-long channel from the Mediterranean at El Alamein, southward to the tip of the depression. Excavation volume would be 380 million cu yd. The job would take five years, according to Egyptian preliminary estimates.

The project has two attractions for the Egyptians, besides its power potential. One is the possibility that evaporation from the water poured into the depression might induce rainfall enough to permit dry farming in the area. Second is the hope that filling the depression with sea water would raise the level of fresh water in the Western Desert oases.

Past estimates have put the total cost of the project at $630 million for a capacity of 225,000 kilowatts. Egyptian engineers are said to have reduced the anticipated cost to $426 million while raising the anticipated output to 400,000 kw, with a possibile later increase to 600,000 kw.

Power rates based on these costs are said to be 60% higher than rates based on thermal generation in the Nile Delta.

This would seem to rule out the project. However, the Egyptian Public Works Ministry has now ordered a further search for ways to cut excavation costs.

The United Nations Special Projects Fund is also looking into the development plan by making independent technical and economic feasibility studies.

Self-leveling level saves up to 50% surveying time

The Ertel Level, proved successful throughout the United States, automatically assumes a truly horizontal line of sight once it has been approximately leveled by its circular bubble.

The self-leveling system consists of two carefully-positioned prisms which are moved by a gravity-operated pendulum to a precise realignment with any accidental change of instrument setting—such as one tripod leg sinking into soft soil. *During extensive leveling operations, the instrument cuts working time as much as 50%.*

The Ertel INA Level—made in West Germany—is 5⅛" high; has a 30x telescope; weighs 19¼ lbs. (including tripod). Write for Bulletin INA which gives complete data.

PRECISION INSTRUMENTS INC.
1900 FIFTH AVENUE, TROY, NEW YORK

WATER WORRIES?
Let real dewatering specialists be your "umbrellas." Engineering, wellpoint equipment, pumping systems, service
John W. STANG
Corporation • Los Angeles • Omaha • Tacoma • St. Petersburg

Planning to enter the foreign market?

If so, bring AFIA into your plans *now* to help make sure that your investment and your liability will be soundly protected right from the start. In this way you profit by . . .

. . . AFIA's decades of experience protecting the overseas interests of American leaders in business.

. . . insurance carefully patterned to your business needs and which meets the insurance requirements of the countries where your risks are located.

. . . on-the-scene service and claims settling facilities through 700 offices in 74 countries.

Whether it's a new venture or expansion of your present foreign operations ask your agent or broker to put AFIA on your planning team to protect the security of your business abroad with OVERSEAS INSURANCE unsurpassed.

AFIA

AMERICAN FOREIGN INSURANCE ASSOCIATION
161 William Street • New York 38, New York

CHICAGO OFFICE . . Insurance Exchange Building, 175 West Jackson Blvd., Chicago 4, Illinois
DALLAS OFFICE . . . . . 400 Vaughn Building, 1712 Commerce Street, Dallas 1, Texas
HOUSTON OFFICE . . . . . The Century Building, 2120 Travis Street, Houston 2, Texas
LOS ANGELES OFFICE . . . . . 3277 Wilshire Boulevard, Los Angeles 5, California
SAN FRANCISCO OFFICE . . Russ Building, 235 Montgomery Street, San Francisco 4, California
WASHINGTON OFFICE . . . . Woodward Building, 733 15th Street N. W., Washington 5, D. C.

An association of leading American capital stock fire, marine, casualty and surety insurance companies providing insurance protection in foreign lands

Pakistani Bridge to Carry Rail and Highway Traffic

Foundation work had begun on an 807-ft-span bridge that will carry rail and auto traffic over the Rohri Channel of the Indus River at Sukkur, West Pakistan. The new span will replace the present Lansdowne Bridge.

The spandrel-braced arch will rest on massive concrete abutments. A single track railway will be set in a concrete deck, which will also carry the auto traffic.

The $3.2-million construction contract went to Dorman Long Bridge and Engineering, Ltd. in association with Gammon Pakistan, Ltd. David B. Steinman of New York City is consulting engineer. Contract time is 20 months.

Briefs . . .

• **Soviet tidal power**—Tass, the Russian News Agency, says the Soviet Union is planning to build two tidal power stations. The first will be built in the eastern part of Mezen Bay, White Sea, which has the Soviet Union's highest tides, about 23 to 33 ft. The second is planned for the Lumbovsky Bay of the Barents Sea.

• **Big plans for India**—The Indian government plans to spend $250 million building five fertilizer plants, estimated at $50 million each, as part of its third five-year plan.

• **Paving of the green**—Ireland's Ministry of Transport and Power has let contracts for construction of a $2.8-million airport near the city of Cork. It will have two runways, one 4,500 ft and the other 3,800 ft, designed to permit future extension. Completion is set for next year.

• **Underground oil**—The first large commercial oil pipeline in Great Britain may get under way this year. Esso Petroleum Co. Ltd., London, plans to lay a 10-in., 1.5-million-gpd line the 75 miles between its refinery in south England and a depot that is located near London. It will be buried at least 3 ft deep. Esso hopes to start work on the project this year and finish by 1963.

• **New Zealand skyscraper**—A 23-story building, the city's tallest, will go up in downtown Auckland. Estimated to cost $4.5 million, the 260-ft-high structure will be built by the Kerridge-Odeon theater organization. Rigby-Mullan, New Zealand architects, are designers of the new building.

"CLASH-BOX" robbing your CASH-BOX?

Crawlers without full-power shift are obsolete . . . and costly!

If your crawlers have master clutches and manual shift transmissions—"clash-boxes" as they're commonly called—you may be passing up profits that should be yours.

With proven Torqmatic Drive in the Model C-6 and the TC-12, Euclid Crawlers provide full-power shift and instant reverse. There's no loss of power or momentum when changing from one speed range to another . . . no delay for clutching and shifting . . . and with a flick of the wrist you change travel direction fast. It's a dependable power train, too . . . proved in thousands of "Euc" earthmovers on every kind of job.

Have your dealer show you how Euclid Crawlers have more productive capacity on any tractor work . . . dozing, ripping, push loading big scrapers, or towing heavy loads. The seconds they save on every work cycle can add up to more cash in your cash box!

EUCLID Division of General Motors, Cleveland 17, Ohio
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland.

Proven Torqmatic Drive provides smooth steady flow of power . . . full-power shift . . . instant reverse . . . easy operation. For push loading scrapers the fast maneuverability of "Euc" crawlers cuts scraper cycle time and steps up production . . . changes from one speed range to another, and from forward to reverse and back again, are made under full power . . . there's no clutching.

GM GENERAL MOTORS EUCLID

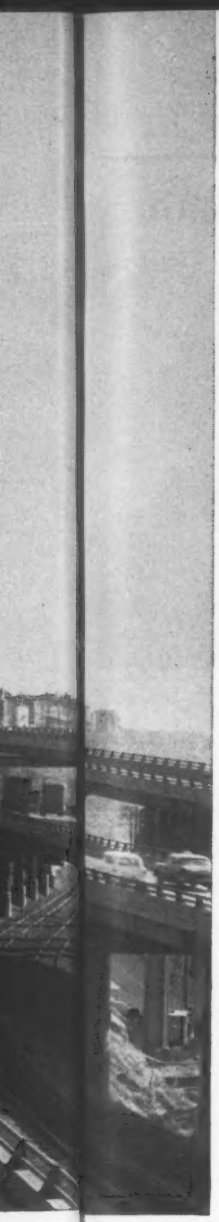
EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Steel members provide better clearance, faster construction on Brady Street Interchange.

Brady Street Interchange, Pittsburgh, Pa., part of the $100 million highway job, carries the Penn Lincoln Parkway and U. S. Routes 30 and 22.

Keep our roads on the GO



Steel is used for 80% of the bridges

designed by Richardson, Gordon and Associates, Pittsburgh, Pennsylvania

By using steel for the nine structures comprising the complex Brady Street Interchange in downtown Pittsburgh, Richardson, Gordon and Associates avoided extra engineering costs, kept traffic tie-ups to a minimum, and held grades within practical limits. The hilly terrain in Pittsburgh imposes severe restrictions on the designer. Steel saved valuable inches of clearance, and every inch saved meant improved interchange layout.

The firm of Richardson, Gordon and Associates has had a major role in engineering such impressive projects as the $50 million section of the Indiana Toll Road, involving the Gary-West Interchange near the Chicago city line; relocation studies of the $38 million Interstate project from the California line to Reno, Nevada, and design of a part of it; and $100 million worth of highway relocation and new expressway construction in the Pittsburgh area.

Mr. Richardson says that they enjoy designing with steel . . . it's a versatile working material, and they know exactly what its performance will be. More than 80% of their bridge designs employ steel throughout. Steel can be transported rapidly and in great quantities when long distances are involved. Since all projects are handled on a time schedule, this feature alone could mean the difference between profit and loss on a given job. Then, too, steel is not difficult to handle, when being transported or placed in a structure.

Increased facilities. Because of the vigorous, ever-expanding demand for steel structures, United States Steel has greatly expanded its facilities for the manufacture of structural shapes and plates. You can confidently design in steel—the material that offers most—knowing that steel will meet your needs and be available. *USS is a registered trademark*

Mr. George S. Richardson, Senior Partner of Richardson, Gordon and Associates and Mr. James H. Morehouse, Partner, examine scale model of Brady Street Interchange, Pittsburgh. In the background is photo of the Delaware River Turnpike Bridge which won Honorable Mention—Class I in the 1956 Annual Bridge Competition of the Institute of Steel Construction.

USS

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

40th YEAR
Spencer White & Prentis INC.
FOUNDATIONS
UNDERPINNING
PILING
CATALOGUE ON REQUEST
10 E. 40th ST., NEW YORK 16
DETROIT: 2033 PARK AVE
CHICAGO: 221 NORTH LaSALLE ST
WASHINGTON, D. C.: TOWER BLDG
PITTSBURGH: EMPIRE BLDG

ELGOOD
Hydraulic & Mechanical
JACKS
Capacities to 600 Tons—48" Travel
Jacking Equipment for
Pipe Pushing
Erection
Pile Driving
Pile Testing
Slip Forms
Tunnel Shields
Prestressed Concrete
many other applications
RENTALS — SALES — DESIGN
Large Stock
Immediate Delivery
Write for Job Fact Sheets
ELGOOD EQUIPMENT CORP.
373 Ten Eyck St., Brooklyn, N.Y.
HY 7-5445

DO WE HAVE YOUR COMPLETE ADDRESS?

Not unless you included your postal zone number when moving, subscribing or renewing subscriptions.

Burdell Takes UNESCO Mission

Edwin S. Burdell, who for the past 22 years has been president of The Cooper Union for the Advancement of Science and Art in New York City, will begin a new career in the field of engineering education Mar. 15 by becoming president of Middle East Technical University at Ankara, Turkey.

He had planned to retire in 18 months but resigned instead and accepted the new position when it was offered to him by the U. S. Department of State acting in behalf of the United Nations Economic, Social and Cultural Organization (UNESCO).

UNESCO organized the university in 1957 under its technical assistance program to educate scientists and engineers for service in the Middle East. From a present enrollment of 600, it is planned to expand the student body to an eventual 20,000. Facilities for this number will be built and divided among three colleges—architecture, engineering and administrative science—a department of agriculture and a school of education.

Mr. Burdell came to The Cooper Union from Massachusetts Institute of Technology, where in 1934 he had been appointed the first dean of its School of Humanities and Social Studies. He established a Department of Humanities at the Cooper Union and was a proponent of the integration of humanistic-social studies with technical studies.

Mr. Burdell is a graduate of MIT and the Harvard Graduate School of Business Administration. He received a doctor's degree from Ohio State University.

AIA Medal to Mies van der Rohe

Ludwig Mies van der Rohe will receive the 1960 Gold Medal of the American Institute of Architects during the AIA convention at San Francisco in April.

Mies van der Rohe, like two other noted architects, Walter Gropius and LeCorbusier, apprenticed in the Berlin office of Peter Behrens.

His first building, the Kroeller house at The Hague, Holland, completed in 1912, caused a sensation in architectural circles for its classic simplicity. This same simplicity distinguishes his most recent structures—such as the Seagram Building on New York's Park Avenue.

A first vice president of the German Werkbund, which tried to bring artists and manufacturers together to improve industrial design, Mies became the director of the Baubaus school of design in Dessau, Germany.

After the Nazis closed the Bauhaus, Mies emigrated to the United States and became the Director of Architecture at the Armour Institute, later the Illinois Institute of Technology in Chicago.

In addition to the Seagram Building, on which he collaborated with Phillip Johnson, he has designed many of the buildings on the I.I.T. campus, the glass-enclosed apartment houses at 860 Lake Shore Drive in Chicago and Cullinan Hall, an addition to the Houston Museum of Fine Arts.

Public Works

Joseph R. Roundtree takes over as Montana state highway division engineer at Glendive. He replaces **Frank A. Small** who has retired. Mr. Roundtree, a veteran of 26 years with the state, has been chief of an interstate highway location party at Hysham. Mr. Small, who started with the state 37 years ago as a rodman, also served as a project engineer and resident engineer.

Blount Whiteside, who has been an engineer with the North Carolina Highway Department, has retired after 38 years service.

C. E. Brown, engineer, retired from the North Carolina Highway Department. He had been with the state 37 years.

Obituaries

Alfred M. Lublin, 54, in the crash of a Scandinavian jetliner near Ankara, Turkey. He was founder and senior partner in the international architectural and engineering firm of Lublin, McGaughy & Associates. His firm handled many projects abroad for the U. S. armed forces and foreign governments, among them, a 400-mile, half-billion dollar French pipeline.

Jack Simmons Lough, 45, chief engineer of the Richmond Engineering Co., Richmond, Va. A graduate of Virginia Polytechnic Institute, Mr. Lough was also a director of the Virgina Society of Professional Engineers.

T. Earle Robertson Jr., 46, engineer-chemist with the Spartanburg, S. C. Waterworks and a former director of the Federation of Sewage & Industrial Wastes Association.

G. Guy Owens, 67, procurement manager for the construction department of Merritt-Chapman & Scott Corp. He came to his present position in 1954 after serving successively since 1927 as field office manager, purchasing agent and contract controller for the New York City firm.

Julian Capers Jr., 64, managing director of the Dallas chapter of Associated General Contractors of America. He joined the organization 15 years ago and has won national recognition for his outstanding labor-management relations work.

Robert Emmett McDonnell, 88, co-founder of Burns & McDonnell, designers of waterworks installations, Kansas City, Mo.

Ray N. Wheelock, 62, director of Hercules Powder Co.'s engineering department. Mr. Wheelock, who took over his duties as engineering director just this year, had been chief engineer since 1947.

Gerald Putnam, 57, assistant professor of graphics at MIT and lecturer in mathematics at Tufts University and Northwestern University.

Howard C. Sword, 66, former engineer for Richland County, Ohio, and former city engineer at Shelby, Ohio.

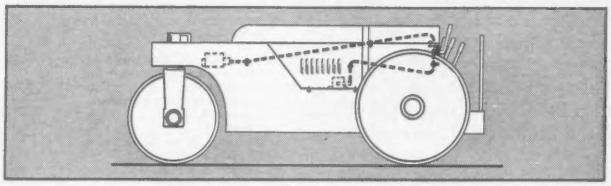
Frank Lee Gorman, retired chief engineer of the department of Port Control for the City of Cleveland and designer of airport runways and docking facilities.

TRU-LAY *PUSH*-PULLS

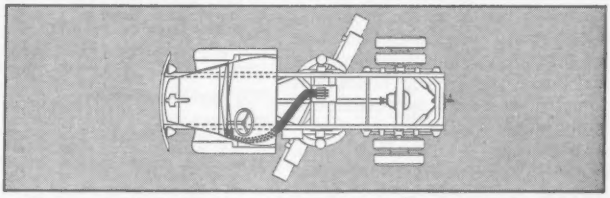
give trouble-free, lifetime service for remote control of construction and quarrying equipment

Operators of Construction or Quarrying Equipment can be certain of maintenance-free service from TRU-LAY PUSH-PULL CONTROLS because of their precision manufacture—rugged construction—lubrication for life of the inner, working member at the factory—complete sealing of the entire unit (a vitally important factor in tough, outdoor operations) against dust, dirt or moisture.

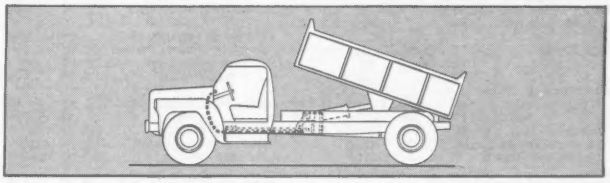
We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL *wearing out in normal service.* Examples of heavy-duty applications are shown below. Users of such equipment benefit from simplified equipment design and improved operation.



• Shown here is a tandem roller where two different PUSH-PULL cables are used to facilitate operation. One cable, 156″ long, is capable of a 2″ stroke to operate the hydraulic steering valve at the front of roller. The second, shorter cable operates tail shaft governor which keeps roller speed constant, upgrade or down.



• More room in the cab of this snow plow was one of the advantages of installing PUSH-PULL cables. This permitted the hydraulic valve to be located at a more convenient point in the chassis. "There are so many things you can do with these flexible cables compared to the old fixed installations," the manufacturer told us.



• Raising and lowering of the dump body on a famous line of hydraulic dump trucks is via TRU-LAY PUSH-PULL cables. With PUSH-PULLS this merely entails the pulling of a button on the dash. The installation did away with cut-up floor boards and levers in the truck cab. TRU-LAY PUSH-PULLS brought easier installation, more convenience and less maintenance.

For complete information
we'll be glad to send you a copy of ***Bulletin DH-461...***

ACCO

Automotive and Aircraft Division
AMERICAN CHAIN & CABLE

601-F Stephenson Bldg., Detroit 2
6800-F East Acco Street, Los Angeles 22 • 929-F Connecticut Ave., Bridgeport 2, Conn.

Wide Bid Spread on Subway Jobs

As part of its subway modernization program, the New York City Transit Commission awarded these two contracts totaling $410,660:

Contract	Amount
Construction of underpass and removal of kiosk at 181 St. station, Manhattan	$123,295
Construction of station finish for northerly mezzanine, DeKalb Ave. station, Brooklyn	287,365
Total	$410,660

The Manhattan contract was awarded to Jemko Co., Inc., Long Island City, on a low bid 3% below the second but 23% under the high of eight bids. The contract includes excavation above and below water; demolition; masonry; electric ducts and conduits; tile work; doors; house sewers and connections; manholes; and other related work and appurtenances. Cast iron pipe must be American Standards Association class 50.

The Brooklyn job was awarded on Nov. 24 to Harry Hershon Co., Inc., New York City. His low bid was 6.7% below the second and almost 29% under the high of seven bids. Job includes underpinning; tile and mosaic work; a token booth; doors; gates and turnstiles; stairs; rails; plumbing and fixtures; electrical conduits; telephone terminal boxes; panel board boxes; and other related work and appurtenances.

Union wages include: carpenter, $4.40; tile setter, $4.05; sheet metal worker, $4.35; electrician, $3.90; common laborer, $3.65.

The bidding on both jobs is tabulated below:

Underpass, and Kiosk Removal

1C Jemko Co., Inc., Long Island City, N. Y.	$123,295
2 Woodcrest Constr. Co., Inc., N.Y.C.	127,566
3 Gelco Builders, N.Y.C.	160,595

Bids: 11-20-59 Items	Unit	Quantity	Unit Prices 1C	2
Excavation above & below water, & disposal, earth	cy	640	$47.00	$40.00
rock	cy	295	47.00	50.00
Masonry, concrete	cy	140	80.00	80.00
remove & dispose of old	cy	35	50.00	50.00
Plaster at sewer manholes & basins	sy	35	4.00	5.00
Steel, riveted, beams & shapes, painted & erected	t	1.5	800.00	600.00
misc architectural, & iron, except castings, compl	lp	1.5	1,300	1,400
reinf bars built in concrete	t	4	400.00	400.00
Misc iron castgs, furnishings, manhole heads, covers, gratings (no pipe)	lp	1	800.00	500.00
Wirprfg, 3 ply, treated woven fabric laid with asph	sy	225	3.50	3.50
CIP, fittings & specials, 2"	lf	35	7.00	5.00
3"	lf	5	10.00	5.00
Vit pipe sewers or basin connections, 15"	lf	35	15.00	15.00
24"	lf	130	20.00	20.00
CIP sewer, straight pipe	t	2	600.00	300.00
Spurs, all sizes	ea	4	15.00	20.00
Risers, all sizes	lf	15	10.00	10.00
House sewers, to & incl 8"	lf	30	10.00	10.00
Vit brick or granite block lining in manholes	sy	10	20.00	20.00
Backwater & sewer gas viv	ea	1	155.00	100.00
RR, maintain, restor, protect safety, all persons & prop	ls	job	9,000	5,000
Gas main, cap & restore at underpass	ls	job	3,000	1,000
Electric, ducts & conduits, vit clay lp, & maintain cables in existing ducts	df	250	$2.50	$2.00
4" concrete	lp	df	125	1.00	3.00
steel pipe, & cables inside —maintain, support & protect, 2"	df	50	2.00	2.00
3"	df	100	3.00	4.00
furn & lay new 3"	df	50	6.00	5.00
Tile, all sizes & shapes lp, white glazed	sf	110	7.00	6.00
white or colored glazed ceramic struct facing	sf	1,000	4.00	3.00
Suspend acoustic ceil, prefab met panels, absorbant pads	lp	sy	50	25.00	18.00
Cmt floor bases	lp	sf	75	3.00	4.00
finish on conc, brick, hollow tile	lp	sf	175	1.00	0.50
finish, 3"	lp	sf	325	1.50	0.75
Conc coping other than at street level	lp	cf	30	10.00	4.00
Brick masonry, common	lp	cf	250	5.00	3.50
Galvanized strap anchors	lp	ea	90	2.00	0.30
Masonry, hollow tile, any size or thickness	lp	cf	90	6.00	4.00
Hollow met door, incl hdwe, type BH	lp	pair	1	600.00	500.00
type DH	lp	ea	1	300.00	300.00
Alter entr SE cor St. Nicholas ave, W 181st St., electrical work	ls	job	1,000	2,500
all other work	ls	job	9,000	20,000
Elec & incident work, compl, tested & ready for oper	ls	job	18,210	24,000

df Duct ft lp In place

Northern Mezzanine, DeKalb Ave. Sta.

1C Harry Hershon, Inc., N.Y.C.	$287,365
2 The P. J. Carlin Constr. Co., L.I.C.	308,184
3 Balaban Gordon Co., Inc., N.Y.C.	403,437

Bids: 11-13-59 Items	Unit	Quantity	Unit Prices 1C	2
RR underpinning, protection, etc	ls	job	$9,150	$19,500
Tile, glazed white, adj to operated track	sf	320	17.00	24.20
2½" radius	sf	40	17.00	24.00
4' radius	sf	5	17.00	24.00
not adj to operated track	sf	780	8.55	12.20
4' radius	sf	10	17.00	12.00
Tile, colored weatherproof	sf	1,500	5.00	6.40
Mosaic work, colored	sf	150	49.00	60.20
Tile, glazed terra cotta, white or colored	sf	400	10.00	7.62
tablets w inscriptions	sf	100	18.00	13.30
Tile, ceramic structural, white or colored	sf	11,500	4.10	3.00
tablets w inscriptions	sf	15	23.00	14.50
Plaster on concrete, etc	sy	130	4.25	7.00
Cmt floor & bases (bases)	sf	950	2.50	5.00
finish on conc, brk, etc	sf	450	1.25	4.00
cement finish, 3"	sf	6,000	1.25	1.50
Conc work, foundations	cy	15	100.00	115.00
copings	cf	100	7.35	5.00
Masonry, remove	cf	5	20.00	20.00
Conc stairs, supported	lf	1,000	5.00	10.00
Non-slip met treads	sf	200	7.35	5.25
Cmt wall stringers	lf	310	3.75	3.50
Non-slip tile treads	sf	360	4.50	5.50
Steel pipe weepholes	ea	80	3.70	0.50
Masonry, common brick	cf	580	5.40	4.00
Galvanized strap anchors	ea	1,000	1.80	1.50
Hollow tile	cf	550	4.20	3.00
metal token booth	ea	1	7,800	8,500
doors, type BH	pair	2	390.00	298.00
type DH	ea	8	300.00	235.00
Railings, type G	sf	600	6.10	7.65
tube	lf	165	12.25	11.71
alum bar, type HA	lf	140	30.00	20.81
tube guard rails	ea	2	160.00	92.16
Gates, aluminum	ea	4	850.00	460.00
Turnstiles, low	ea	4	910.00	730.00
Signs, enameled	sf	50	10.00	15.73
type C	sf	16	12.50	14.00
type D	sf	160	15.00	21.45
Street railings, type KS	lf	36	85.00	49.63
KS1	lf	42	85.00	49.63
Aluminum ceiling	sy	2,350	30.00	30.00
Steel ladder w treads	lf	6	37.00	26.68
shapes	lb	800	0.75	0.56
ladders w rungs	lf	16	8.50	12.52
rods	lb	500	0.40	0.50
Handrails, tube	lf	260	85.00	$4.97
aluminum	lf	105	5.00	7.92
Rough plumbing	ls	job	1,560	5,000
Floor drainage castings, cast iron frames	ea	14	30.00	1.40
ferrules & plugs	ea	4	30.00	30.00
Plumbing fixtures, closet bowls	ea	1	150.00	110.00
lavatories	ea	1	150.00	110.00
service sinks	ea	1	150.00	110.00
Alum register w louvre	ea	1	60.00	76.00
Steel electric conduit, 1"	lf	255	3.60	2.30
1¼"	lf	85	4.80	3.60
1½"	lf	5	13.00	3.80
CI outlet boxes, 4x4x3"	ea	1	30.00	15.00
type FD	ea	2	36.00	15.00
Tel terminal box, 18x4x24"	ea	1	190.00	125.00
20x6x27"	ea	1	190.00	115.00
20x7x28"	ea	1	190.00	115.00
24x6x27"	ea	1	190.00	115.00
Paint iron, steel, etc., 2 coats on concrete	sf	11,500	0.15	0.15
clean existing steel	sf	22,000	0.13	0.12
additional coats	sf	5,000	0.06	0.06
Paint existing structure	ls	job	17,000	16,000
Dwarf walls	ls	job	3,660	6,000
Remove marquee, etc	ls	job	7,418	5,000
pipe	ls	job	1,830	2,000
Clean existing tile	ls	job	7,320	14,000

Commence: 1-10-60. Completion schedule: 6 months. Liquidated damages: $100/day.

Tank Cost Range Is $179 To $240/mg of Capacity

As the first step in a comprehensive water improvement program, Pinckneyville, Ill., took bids on a 300,000 gal, six-legged elevated water tank on a 100 ft tower. Clark, Daily & Dietz, Urbana, Ill., is the consultant.

Five contractors priced the base bid on a double ellipsoidal tank, which the engineers estimated at $60,000. Pittsburgh-Des Moines Steel Co., Chicago, also bid on an alternate torus spherical design, and Chicago Bridge & Iron Co. on an alternate spheroidal tank.

The award at $53,640, to Pittsburgh-Des Moines, was on the torus spherical alternate, 11% under the engineers estimate and 4% under Pittsburgh's low bid on the ellipsoidal tank. Chicago Bridge & Iron Co.'s $56,200 bid on the alternate spheroidal tank was 3.6% under its own base bid on the ellipsoidal tank.

Work commenced in January with 195 days allowed for its completion.

The following tabulation breaks down the bid prices on all three designs, to show the cost per M gal of capacity for each:

Bids: 1-4-60	Capacity M gal	Bid Price	Cost per M gal of capacity
Double Ellipsoidal Tank (Base Bid)			
Pittsburgh-Des Moines, Chicago	300	$55,990	$186.63
Chicago Bridge & Iron, Chicago	300	58,300	194.33
W. E. Caldwell, Louisville, Ky.	300	61,270	204.23
Graver Tank & Mfg., Div. of Union Tank Co., Chicago	300	62,841	209.47
Nooter Corp., St. Louis, Mo.	300	71,980	239.93
Alt. Toruspherical Tank (Contract)			
Pittsburgh-Des Moines	300	53,640	178.80
Alt. Spheroidal Tank			
Chicago Bridge & Iron Co.	300	56,200	187.33

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.,* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. per cy
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 cy & over
Atlanta	$4.38a‡	$3.88a‡	$3.68a‡	$3.10a‡	$3.10a‡	$1.85‡s	$2.18s	$2.33s	$1.65r	$1.75r	$0.175o	$0.21o	$13.75g
Baltimore	4.42a	3.91a	3.56a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.50ou
Birmingham	4.43c	3.40cf	.....	2.53ns	2.53ns	2.13ns	2.75s	2.75s	1.65d	1.75d	.19	.19	14.25q
Boston	5.83‡p	4.52ap	4.90‡mp	3.00qs	3.00qs	3.00qs	1.75qz	1.85qz	.....	.....	.23o	.275as	15.00q
Chicago	4.52ag	4.02ag	4.15g	3.78‡e	3.78‡be	4.13‡be	3.95‡be	3.95‡be	2.25‡s	2.25‡s	.26‡s	26‡be	14.00e
Cincinnati	4.68c	4.16c	4.18c	2.29‡cu	2.34‡cu	2.44‡cu	2.51‡cu	2.74‡cu	1.80u	1.80u	.20o	25ao	15.00qr
Cleveland	1.37‡	.....	4.19‡ae	2.25ae	2.10ae	1.75ae	2.80fy	2.80fy	2.20‡f	2.20‡f	.....	23f	17.25u
Dallas	3.65a	3.25a	3.53a	2.65‡a	2.75‡a	1.90‡	2.43	2.63	....	....	....	27	12.50z
Denver	4.80a	4.39a	4.89	1.95‡	2.15‡	1.42‡b	.....	3.00‡z	.....	.....	.25	27eo	11.90
Detroit	4.50a	3.89aqq	3.97a	4.50‡abm	4.50‡abm	4.25‡abm	3.75‡aim	3.75‡abm	2.53aqaa	2.53aqaa	.24u	27‡au	15.50eaa
Kansas City	4.52a	3.92a	4.30a	....	....	1.85‡a	2.00‡a	2.00‡a	....	....	.22a	.26c	14.00
Los Angeles#‡	5.12eh	4.68eh	5.60c	2.56‡at	2.76‡at	2.41‡at	2.41‡at	2.46‡at	....	....	.19f	.305	12.46hlz
Minneapolis	4.66a	4.15a	4.25a	2.70‡ae	2.70‡ae	1.60‡ae	3.95‡ae	3.95‡ae	....	....	.20q	....	14.30f
Montreal	3.36‡det	3.11‡det	3.72‡det	1.90‡at	2.15‡at	2.40‡a	1.90‡†	2.15‡†	2.00†	2.00†	.20†	.28‡†	10.80ek†
New Orleans	4.06b	3.65b	3.85b	2.61b	2.61b	2.16b†	....	....	1.65d	1.75d	.29r	.29	14.00e
New York	4.68a	4.18a	3.75a	....	3.20bk	2.30bkw	2.29bbb	2.29bbb	....	....	.265wo	.32bwo	17.60ay
Philadelphia	4.49‡ae	3.99‡ae	3.51‡e	1.95‡a	1.95‡a	1.55‡a	2.00‡a	2.30‡a	2.25‡a	2.25‡a	....	.225	13 90z
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.68‡aqv	2.68‡aqv	3.08‡aqv	2.00‡aqv	2.00‡aqv	2.10w	2.10w	.26rx	.26rx	16.15o
St. Louis#‡	4.54a	4.04a	4.24a	3.40‡as	3.40‡as	2.40/3.40‡as	1.75‡s	1.75‡s	....	....	.255‡s	.315‡co	13.65/14.10q
San Francisco	4.34c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28cl	13.00cw
Seattle	4.47‡a	3.75ag	4.65a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.324s	.45cs	13.90‡
Toronto	5.20i	3.84‡	5.20i	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.26	.275cu	13.75q

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax ## Add 2% Intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: •a Less 10¢ disc. 15 days. •b Less 2% disc. 15 days. •c Less 10¢ disc. 10 days. •d 10¢ disc. 20 days. •e Truckload lots. •f Fob mill, add $14.58 to $21.31 per car switching charges. •g fob mill + freight. •h LCL. •i Less 2% disc. 10 days. •j Truck lots, fob yard. •k 100 bag lots •l over 150 sacks. •m Sold in bags only. •n Less 5% disc. 30 days. •o Plus 50¢ for Sat. del. •p 5-9 ton truckload. •q F.o.b. mill •s In bags & bbl. Only •t min. 7 tons

SAND, GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons up. •d Less 5¢ disc. 10 days. •e Less 2% disc. 10th. •f Less 2% disc. 15th. •g Less 5% for cash. •h Less than 5 tons. •i F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •q F.o.b. yard. •r less 5% disc. 15th. •s Less 2% disc. 10 days. •t Less 10¢ disc. 10 days. •u Less 5¢ disc. 10 days. •v Less 2% disc. 15 days. •w Less 10¢ disc. 15 days. •x Incl. 25¢ switch. charge. •y F.o.b. dock. •z 5-9 tons. •aa Less 5% disc. 15 days. •bb Less 2% 25th of month

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocrete, •e 5¼ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •i F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 18. •o Less 2% disc. 10 days. •p Less 2% disc. 10th. •q Less 5% disc. 10th. •r Less 2% disc. 15 days. •s Less 2% disc. cash. •t Siporex, 7 x 8 x 16. •u Less 5% disc. 10 days. •v Less 12% disc. 15th.

READY MIXED CONCRETE: •a 6 cu yd or over del. Man. •b 25 cu yds or more. •c 10-100 cy. •d 1-3 mi. zone add 15¢ for ea. add'l 1-mi. zone. •e 3,000 lb comp. •f 2,500 lb. comp., less 5% disc. 30 days. •g Less 25¢ disc. 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 6% mun. & prov. tax. •l 1:2½:3½ base price. •m F.o.b. yard. •n Plus escalator clause. •o Less 2% disc. 15 days. •p Less 50¢ disc. 15 days. •q Less 2% disc. 10 days. Add 50¢ per zone. •r 2000 wgt. •s Less 5% disc. 10 days. •t Incl. 50¢ heating. •u Less 2% disc. 15th. •v Sat. del.+50¢. •w 10-100 cy. •x Del in zone 20-B. •y less 25¢, 10 days. •z less 1% in 30 days. •aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 40¢ per bbl., not refundable. *Prices guaranteed through December 31, 1960*
* Eff. 1/1/60

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.55	Buffington, Ind	$3.55	Steelton, Minn	$3.60	Muskegon, Mich	$3.60	Toledo, O	$3.45
Clinchfield, Ga	3.55	Independence, Kan	3.35	Leeds, Ala	3.40	Saginaw, Mich	3.60	Milwaukee, Wis	3.50
Kingsport, Tenn	3.55	Hannibal, Mo	3.50	Duluth, Minn	3.45	Wyandotte, Mich	3.60	Green Bay, Wis	3.50
West Des Moines, Iowa	3.60	Northampton, Pa	3.50	Hudson, N. Y	3.50	Buffalo, N. Y	3.55	Ironton, O	3.55
Nazareth, Pa	3.50	Universal, Pa	3.60	Alpena, Mich	3.50	Oswego, N. Y	3.60	Montreal, Can	2.81
Bath, Pa	3.50	Waco, Tex. (+ 10¢ tax)	3.35	Detroit, Mich	3.60	Cleveland, O	3.50	W. Winfield, Pa	3.60
Leeley, Pa	3.50	Giant, S. C	3.55	Howes Cave, N. Y	3.50	Alsen, N. Y	3.50	Security, Md	3.50

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 60-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	#	#	#	$28.70PS	$45.00PS	$0.2740PS	$0.2358	$0.1308wS	$0.245wS	$0.1258S	$0.1328S	$0.245
Baltimore	#	#	#	21.00i	.....	.09i	0.18i	.09wE	.18iwE	.005i	.10i	0.19i
Birmingham	.....	66.00i	.....	25.12	25.69O	.1069	0.1093O	.1162w	.1188Ow	.1006O	.1069	0.1093O
Boston	.....	.....	.....	22.00apS	46.00apS	22.00anS	46.00anS	.105awF	.22awF	.14aOR	.15OR	.....
Chicago	150.00‡a	95.00‡ab	3.95/4.00‡aj	22.00b	32.00b	20.40bv	30.40bv	.10bwH	.18bwH	.08b	.....	.....
Cincinnati	.....	.....	.....	26.00SU	.....	26.00ff	.....	.1165wSU	.....	.109	.1265	.....
Cleveland	.....	89.50‡d	6.30	26.00tA	.....	26.00tsA	.....	.1165twAF	.....	.....	.1265tA	.21A
Dallas	#	40/80p	#	26.90	46.35	.1138	.1983	30.50	52.45	.1100	.1138	.1983
Denver	.....	62.00s	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	119.00	.....	30.90R	.....	31.00sR	.....	.1342wIR	.....	.1000	.....	.23
Kansas City	#	#	#	19.00el	.....	18.00es	.....	.0835cwJ	.....	.0791s	0.125s	.....
Los Angeles#	#	#	#	21.50dmx	.....	21.50dnx	.....	23.00dKx	.....	22.00dsas	23.90‡Xs	26.30‡Xs
Minneapolis	.....	.....	3.78h	25.00	.....	25.00v	.....	.11w	.....	0.10	.1375bb	.....
Montreal	#	#	#	30.50n	43.60n	.167n	.211n	17.80nuE	22.20nuE	.155n	.242n	.27nX
New Orleans	#	#	#	20.00s	.....	20.00s	.....	.095cw	.....	.085aB	.095aBL	.1905aB
New York	.....	.....	3.70f	23.99mO	45.94mO	23.99s‡O	45.94sO	10.61wF	20.01wF	.....	10.68u	20.11u
Philadelphia	.....	.....	.....	21U	.....	21U	.....	.0635U	.....	.095U	.....	.....
Pittsburgh	60.00k	95.00n	6.35n	31.20is	.....	31.20is	.....	.1403‡S	.....	.142S	.1403i	.....
St Louis##	.....	.....	.....	19.74f	21.19	.1825f	.1825	.0890f	.0915fw	0.165f	.1825O	.30R
San Francisco	.....	70.00	.....	22.50gdd	41.00gdd	22.50gkdd	41.00gkdd	22.50gNdd	46.50gNdd	23.25gWdd	23.50gXdd	.2025gXdd
Seattle	.....	.....	.....	24.00z	47.00h	33.00wcc	38.50	25.80KE	.....	28.75kvF	25.80knX	49.80krX
Toronto	.....	139.00‡t	4.50f	38.90	59.01ee	0.2075	0.2773ee	0.222w	0.2704wee	0.233	0.218Zee	.273Zee

‡ Delivered. # Add 4% sales tax. ## Add 2% Intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: •a Less 2% disc. 10th. •b 3 x 3½ x 8. •c 2¼ x 3¾ x 4. •d Truckload lots. •e Not used. •f 2" interior 6 lb tr. •g Less $1/Mdisc. 15th. •h 2" tr, 8 lb. •i 3 x 3½ x 8½. •j 2½", 6 lb. tr. •k Used. •l Redshale. •m Pine: oak $6.57. •n Truck del. •o Less $1/M disc. 15 days. •p Used: $40; new: $80.

ASPHALTS: •a F.o.b. refinery, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segundo. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. refinery, Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 'penetr. •l Less than 100 penetr. •m 40/300 penetr. •n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60/70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150/300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS •H RC 0-5 incl. •I MC 4. •J MC, RC $0.095. •K MC 3, 4, & 5. •L MS. •M MC 1-5, RC 1-5, $0.0918. •N MC 3. •O Truck-load. •P F.o.b. refinery, Atlanta. •Q F.o.b. Eldorado, Ark. •R Delivered within 50 mi' •S Less 2% disc. 10 days, net 30. •T Less 1% disc. 10 days. •U F.o.b. refinery. •V Less 2% disc. 15 days. •W SC 2. •X RS 1. •Y SC 1. •Z Incl. 10% Sales Tax. •aa SC 3, 4, & 5. •bb RS 3. •cc In used drums. •ddl ess disc of $1 ton. ee 45 Imp. gal. drums •ff 60-150 penetration

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Feb. 18; Next, Mar. 24.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Feb. 25; Next, Mar. 31.
- Wage Rates, Building Board Insulation: Last, Mar. 3; Next, Mar. 31.
- Iron & Steel Products, Pipe: Last, Feb. 11; Next, Mar. 17.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTING
STREETS AND ROADS
March 14 Connecticut

BUILDINGS—BA

▲ **Mass., Braintree**—HIGH SCHOOL—BA 3/24—Town, 10 Tremont St., Junior High School, River St. $1,750,000. Plans deposit $100. Rich & Tucker Assoc., 45 Newbury St., Boston, archts. CD 5/6.

▲† **Me., Topsham**—HOUSING—BA 4/3—Base Procurement Office, Topsham Air Force Station, Brunswick, 177 unit Capehart Housing, Topsham Air Force Station, Inv. No. 17-612-60-2. $2,900,000. Extended date. Kelly & Gruzen, 10 Columbus Circle, New York, N. Y., archts. CD 2/24.

BUILDINGS—LB & CA

▲ **East Coast Builders-Michael Campanelli**, Campanelli Dr., Braintree, Mass., Owner Builds, **$5,600,000**, 350 HOUSES, Main Brook and Paraenter Sts., HUDSON, MASS. CD 3/2.

▲ **Tornabene Bros. Co.**, 170 Needham St., Newton Upper Falls, Mass., CA **$1,717,000**, est. $1,700,000, REGIONAL HIGH SCHOOL, MATTAPOISETT, MASS. Old Rochester Regional School Dist., Mattapoisett, Mass. Bids Feb. 4, CD 2/10, under LB.

▲ **Leatherbee & Co.**, 235 Harvard St., Brookline, Mass., Owner Builds, Approx. **$3,800,000**, APARTMENTS, off Whitney St., ROXBURY, MASS. City of Boston will lease. CD 1/6, under Beacon Redevelopment Corp., as owner.

▲ **Thomas O'Connor & Co.**, 238 Main St., Cambridge, Mass., CA Est. **$3,800,000**, APARTMENTS, off Whitney St., ROXBURY, MASS. Owner, c/o contractor. Hugh A. Stubbins & Assoc., 806 Mass. Ave., Cambridge, Mass., archts. City of Boston will lease. CD 1/6, under Beacon Redevelopment Corp., as owner.

▲ **Litchfield County Homes, Inc.**, Lamphere Rd. R.F.D. No. 1, Mystic, Conn., Owner Builds, **$3,320,000**, 332 HOUSES "Fieldcrest Estates," Second Section, GROTON, CONN.

▲ **Industrial Constr. Co.**, 120 Prospect Ave., Hartford, Conn., CA **$2,000,000**, OFFICE, Jefferson St., HARTFORD, CONN. Jefferson St. Medical Building, Inc., 85 Jefferson St., Hartford, Conn. Moore & Salsbury, 1007 Farmington Ave., West Hartford, Conn., archts.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 24 Pennsylvania
STREETS AND ROADS
March 16 Delaware, New Jersey March 23 New Jersey
March 24 Pennsylvania

▲ **N. J., Linden**—BA 3/15—Common Council, Council Chamber, City Hall, storm drain, appurtenances, Contr. 4, Storm Drainage Relief Proj., Eighth Ward, incl. about 1,112 lin. ft. 120 in. diam. rein.-con. drain and appurtenant structures. Plans deposit $25. Alexander Potter Assocs., 50 Church St., New York, N. Y., engrs. CD 10/2.

BUILDINGS—BA

▲ **N. Y., Brockport**—HEALTH AND PHYSICAL EDUCATION—BA 3/16—Henry A. Cohen, dir. Bureau Contracts, Dpt. P. Wks., State Office Bldg., Albany, general contract, heating, sanitary and electric work and laboratory equip. for Health and Physical Education, Bldg. No. 24, incl. service connections, State University College of Education. Plans deposit $50 general, $30 heating, $20 each sanitary and electric, $5 laboratory equipment. CD 3/26/57.

▲ **N. Y., White Plains**—EXECUTIVE OFFICE—BA 3/24—Picker X-Ray Corp., 25 South Broadway, 1 and 2 story, 44,500 sq. ft., steel frame executive office, Mamaroneck Ave., 10-acre site. $1,000,000. Kahn & Jacobs, 2 Park Ave., New York, Zone 16, archts. Jaros, Baum & Bolles, 730 3rd Ave., New York, mechanical engrs. Garfinkel & Marenberg, 100 W. 42nd St., New York, structural engrs. Clarke & Rapuano, 830 3rd Ave., New York, site engrs. CD 9/4.

▲ **N. Y., Tarrytown**—INN—BA in April—Hilton Hotels Corp., 401 7th Ave., New York, Zone 1, 1,200-room Inn on 10-acre tract at Broadway and New York State Thruway Exit No. 9. $2,000,000. William B. Tabler, 401 Seventh Ave., New York, Zone 1, archt. CD 12/3.

BUILDINGS—SLC

▲ **N. Y., New York**—HOSPITAL—New York University-Bellevue Medical Center, 550 First Ave., Zone 16, soon lets contract 19 story hospital, East 33rd St. and First Ave. Skidmore, Owings & Merrill, 575 Madison Ave., Zone 22, archts. CD 1/26.

HEAVY CONSTRUCTION—LB & CA

▲ **Port of New York Authority**, 111 Eighth Ave., New York 11, N. Y., cancelled bids to have been opened Mar. 1, supply and erection structural steel for George Washington Bridge Bus Station adjacent to New York Plaza of George Washington Bridge, Contr. GWB-200.012, NEW YORK. CD 2/19.

▲ **Bates & Rogers Constr. Corp.**, 600 W. Jackson St., Chicago, Ill., LB **$1,926,871**, (7 bidders), Sched. 1, (power authority supplying aggregate), South Approach road 5.5 mi., Lewiston Rd. 6.5 mi. from Devils Hole Park to Niagara Power Plant, Contr. N-26, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Feb. 18, CD 1/21;
Coleman Bros. Corp., Readville, Mass., LB **$2,114,393**, (2 bidders), Sched. 2, (contractor furnishing aggregates) South Approach road 5.5 mi., Lewiston Rd. 6.5 mi. from Devils Hole Park to Niagara Power Plant, Contr. N-26 (New York).

▲ **Bethlehem Steel Co.**, 25 Broadway, New York 4, N. Y., LB **$46,919,530**, (3 bidders), Sched. I (combination Scheds. II & III), Narrows Bridge Contr. No. NB-2B, Brooklyn Tower; Narrows Bridge Contr. No. NB-2S, Staten Island Tower; LB **$23,413,900**, Sched. II, Contr. NB-2S, Staten Island Tower, NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N. Y. Bids Feb. 24, CD 1/14;
Harris Structural Steel, 419 4th Ave., New York 10, N. Y., LB **$22,697,091**, Sched. III, Contr. NB-2B, Brooklyn Tower (New York).

▲ **Horn Constr. Co.**, 2174 Hewlett Ave., Merrick, N. Y., LB **$1,937,910**, (9 bidders), Throgs Neck Bridge, Contr. No. TN-10E, Bronx and Queens approaches viaduct roadway slabs, NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N. Y. Bids Feb. 25. CD 2/1.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; Industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

▲ **United States Steel Corp.**, 71 Broadway, New York 6, N. Y., CA **$56,896,390**, Narrows Bridge Contr. No. NB-3, cables and suspenders, NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 35, N. Y. Bids Feb. 16, CD 2/18, under LB.

▲ **Peerless Constr. Co., Inc., & Waldman Constr. Co.**, 40-01 29th St., Long Island City, N. Y., CA **$3,508,519**, constr. platform extension to stations of Lexington-4th Avenue Line, IRT Division, Contr. C-135, Manhattan Boro, NEW YORK, N. Y. New York Transit Auth., Rm. 1310, 370 Jay St., Brooklyn 1, N. Y. Bids Jan. 22. CD 1/26, under LB.

▲ **Carl E. Widell & Son**, Merchantville, N. J., LB **$1,689,100**, (14 bidders), general contract 12 m.g.d. filtration plant, incl. 3 settling tanks, 3 solid matter tanks, 6 filter beds, chemical softening bldg., administration bldg., POUGHKEEPSIE, N. Y. Dpt. P. Wks., City Hall, Poughkeepsie, N. Y. Bids Feb. 23. CD 2/11.

▲ **Merando, Inc.**, 4098 Minnesota Ave. N.E., Wash., D. C., CA **$2,023,589**, Incinerator No. 4, Fort Totten Dr. and Hawaii Ave. N.E., WASH., D. C. D. C. Government, Dpt. Buildings & Grounds, 299 Penn. Ave. N.W., Wash., D. C. Bids Feb. 17. CD 2/19, under LB.

BUILDINGS—LB & CA

▲ **Terminal Constr. Corp.**, P.O. Box 175, Wood-Ridge, N. J., LB **$1,995,000**, (7 bidders), ADMINISTRATION BLDG. at new Jersey approach to George Washington Bridge, Fort Lee Boro, N. J. Contr. GWB-190.026, NEW YORK and NEW JERSEY. Port of New York Authority, Rm. 1100, 111 Eighth Ave., New York 11, N. Y. Bids Feb. 26. CD 2/19.

▲† **P. J. Carlin Constr. Co. and Atlas Tile & Marble Works, Inc.**, 41-17 Crescent St., Long Island City, N. Y., CA **$13,683,000**, COURT HOUSE and FEDERAL OFFICE BLDG., Washington, Tillery and Adams Sts., Proj. No. 30904, BROOKLYN, N. Y. General Services Admin., P. Bldgs. Service, Region 2, Business Service Center, 250 Hudson St., New York 13, N. Y. Bids Jan. 7. CD 1/11, under LB.

▲ **Battle Hill Estates**, c/o Brouneh & Kramer, 1478 Morris Ave., Union, N. J., Owner Builds, **$2,000,000**, 70 HOUSES, Killian Place, UNION, N. J.

▲ **Stanton L. Triester Constr. Co., Inc.**, 560 Church Rd., Elkins Park, Pa., Separate Contracts, **$9,000,000**, RESIDENTIAL DEVELOPMENT (700), Woodhaven Rd., etc., PHILA., PA.

▲ **Parkside Apartments**, 10313 Montrose Ave., Bethesda, Md., Owner Builds, **$2,000,000**, 170 unit garden type Parkside APARTMENT No. 3, Montrose Ave. and Wisconsin Ave., BETHESDA, MD. Alvin L. Aubinoe, 1515 19th St. N.W., Wash., D. C., archt.

▲ **Meadowbrook, Inc.**, 8555 Connecticut Ave. N.W., Wash., D. C., Owner Builds, **$10,000,000**, 400 HOMES "Rockville Estates," ROCKVILLE, MD. John Bartley, 2311 University Blvd. West, Wheaton, Md., archt. CD 12/1, under Monroe Warren as owner.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 16 Louisiana March 18 Tennessee
STREETS AND ROADS
March 16 Louisiana March 18 Tennessee

▲† **Miss., Meridian**—OLF BRAVO—BA 3/30—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U. S. Naval Base, Charleston, S. C., OLF Bravo, which incls. complete outlying landing field, a satellite field for auxiliary air station, incl. 6,500 ft. runway, connecting taxiway, parking apron, operations bldg., paved access road, optical landing sys., airfield lighting, woven wire perimeter fence and appurtenant work, U. S. Naval Auxiliary Air Station, NBy 25463, Spec. 25463/59. Over $1,000 000. Plans deposit $100. CD 9/25.

BUILDINGS—BA

▲ **Tenn., Cookeville**—RESIDENCES—BA 3/31—State Purchasing Agent, Cordell Hull Bldg., Nashville, Unit 3, Men's Residence; Bldg. C, Women's Residence. Plans deposit $200. Steinbaugh & Assoc. Architects, 1035 Third National Bank Bldg., Nashville, archts. CD 4/15/58 and 12/3.

HEAVY CONSTRUCTION—LB & CA

▲ **Diamond Constr. Co.**, P. O. Box 647, Savannah, Ga., CA **$11,631,669**, underwater section 2nd Norfolk-Portsmouth Tunnel, Norfolk, VIRGINIA. Elizabeth River Tunnel Conn., City Hall, Norfolk, Va. Bids Feb. 17, awarded Feb. 25. CD 2/19, under LB.

▲† **Corbetta Constr. Co., Inc.**, 220 E. 42 St., New York, N. Y., LB **$4,432,000**, structural portion terminal bldg., Dulles International Airport, CHANTILLY, VA. Federal Aviation Agency, 16 and Constitution Ave., Wash., D. C. Bids Mar. 1. CD 2/1.

▲ **FLORIDA**—State Rd. Dpt., Cherry Plaza Hotel, Auditorium, East Central Ave., Orlando, Bids opened 2/23, Fla.—J. W. Conner & Sons, Inc., Box 2522, Tampa,

Fla., LB **$2,234,801,** (6 bidders), 4-lane divided 9 in. c. conc. pavement, 8½ in. limerock base Type 1 b. conc. surf. binder course and Type 1-B surf. tr. (3 in.) 6½ in. limerock base shoulders Type 1-B surf. tr. 2.328 mi. SR 400 FAI Proj. No. I-4-1 (22) 20, Job No. 10190-3408, Hillsborough Co.;

Fla.—**Harbert Constr. Co.,** Box 1369, Birmingham, Ala., LB **$3,973,318,** (17 bidders), 6-lane divided 9 in. c. conc. pavement 8 in. limerock base, Type I b. conc. surf. course and binder course, 6½ in. limerock base shoulder with Type 1-B surf. tr. 0.776 mi. SR 400, FEI Proj. No. I-4-2 (24) 100, Job No. 75280-3417 and State Jobs Nos. 75280-3501 and 75040-3503, Orange Co.;

Fla.—**Wainer Constr. Co.,** Box 1172, Valdota, Ga., LB **$1,351,749,** (7 bidders), 4-lane 9 in. c. conc. pavement, 8½ in. sand-clay base, Type 1-B surf. tr. and Type II b. conc. surf. course, 6½ in. sand-clay base paved shoulders with Type 1-B surf. tr. 2.159 mi. SR 8, FAI Proj. No. I-10-1 (7) 11, Job No. 48260-3403, Escambia Co.;

Fla.—**W. R. Fairchild Constr. Co.,** Box 31, Hattiesburg, Miss., LB **$1,093,727,** (5 bidders), 4-lane divided 8 in. shell stabilized base, Type 1-B bit. surf. tr. binder course and Type I b. conc. surf. course (3 in. thick) 3.959 mi. SR 397 85 and 20, Fed. Aid Proj. F-F-041-1 (3) Jobs Nos. 57040-3115 and 57050-3110 and State Jobs Nos. 57040-3501 and 57050-3501, Okaloosa Co. CD 2/8.

▲† **Phillips & Jordan,** Robbinsville, N. C., CA **$1,741,190,** clearing area for Walter F. George Reservoir, CIVENG-01-076-60-23, ALABAMA and GEORGIA. U. S. Eng., P. O. Box 1169, Mobile, Ala., Bids Feb. 4. CD 2/23, under LB.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 2/24, **Brown & Root, Inc.,** 4100 Clinton Dr., Houston, Tex., LB **$14,784,049,** twin bridges prestressed concrete girder and welded composite spans 5.406 mi. Lake Pontchartrain Bridge on Little Woods-Slidell Hy., Rte. I-10, SP No. 740-00-39, FAP No. EI-10-5(18) 258, St. Tammany and Orleans Parishes. CD 1/15.

▲ **LOUISIANA**—State Hy. Dpt., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, **Atlas Constr. Co., Inc.,** Box 531, Ruston, La., CA **$1,994,428,** grading, c. conc. pavement, grade separation 3.477 mi. Simsboro-Ruston Grambling Hy., Rte. 1-20.SP 451-05-11 FAP 1-20-2(9)982S, Lincoln Parish. Bids Jan. 27. CD 2/3, under LB.

▲† **Markwell & Hart,** P.O. Box 6225, Memphis, Tenn., CA **$1,504,126,** constr. outlet works on No. 2 Barren Reservoir, Barren River near Bowling Green, CIVENG 15-029-60-20, KENTUCKY. U. S. Eng., P.O. Box 59, Louisville 1, Ky. Bids Feb. 24. CD 2/29, under LB.

BUILDINGS—LB & CA

▲ **Edward M. Fleming Constr. Co.,** 4121 NW 25 St., Miami, Fla., CA **$5,365,501,** CRIMINAL COURTS BLDG., MIAMI, FLA. Bd. Comrs., Dade Co., 10 Floor Courthouse, Miami, Fla. Bids Feb. 2, awarded Feb. 24. CD 2/9, under LB.

▲ **Scott Development Co.,** 1239 NE Main St., College Park, Ga., Separate Contracts, **$2,000,000,** 200,000 sq. ft. SHOPPING CENTER, COLLEGE PARK, GA. CD 11/24.

▲ **Barksdale & LeBlanc,** Box 2867, Baton Rouge, La., LB **$1,927,500,** est. $1,800,000 (16 bidders), 4 story ADMINISTRATION BLDG., BATON ROUGE, LA. State Dpt. Labor, Div. Employment, Baton Rouge, La. Bids Feb. 25. CD 1/26.

▲† **Henry C. Beck Co.,** Fulton National Bank Bldg., Atlanta, Ga., LB **$4,862,000,** Alternate 1, METALS and CERAMIC BLDG., ORNL, X-10 Area, Inv. 401-60-12A, OAK RIDGE, TENN. U.S. Atomic Energy Comn., P.O. Box E, Oak Ridge, Tenn. Bids Feb. 25. CD 2/3.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
March 15 Ohio

STREETS AND ROADS
March 15 Ohio

BUILDINGS—BA

▲ **O., Parma**—HIGH SCHOOL—BA 3/15—Catholic diocese of Cleveland, 1027 Superior Ave., Cleveland, Zone 14 (selected list of bidders), 4 story St. Anthony of Padua High School, $2,000,000; elementary school for St. Anthony of Padua Parish, State Rd., $500,000. Plans deposit $25 each. Stickle & Assocs., 2422 Prospect Ave., Cleveland, Zone 15, archts. CD 9/10.

HEAVY CONSTRUCTION—LB & CA

▲ **Malan Constr. Co.,** 2 Park Ave., New York 16, N. Y. LB **$1,645,000,** fuel tank facilities, Chicago-O'Hare International Airport, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Feb. 26. CD 2/17.

▲ **Combustion Engineering Co.,** 200 Madison Ave., New York 16, N. Y., CA, 20 story, 3,000,000 lbs. steam per hr. generating unit, Will County Station near LEMONT, ILL. Commonwealth Edison Co., 72 W. Adams St., Chicago, Ill.

BUILDINGS—LB & CA

▲ **L. C. Homes, Inc.,** 3083 Shadycrest Dr., Cincinnati, O., Owner Builds, **$5,000,000,** 230 HOMES, southeast

This pipe never stops saving money!

Transite Irrigation Pipe goes to work reducing water-carrying costs right at the beginning, in system design!

You find—in the planning of the system—that you're specifying smaller diameter, less expensive pipe sizes. Why? Because Transite® maintains its original flow characteristics. *It simply will not tuberculate to reduce water flow!*

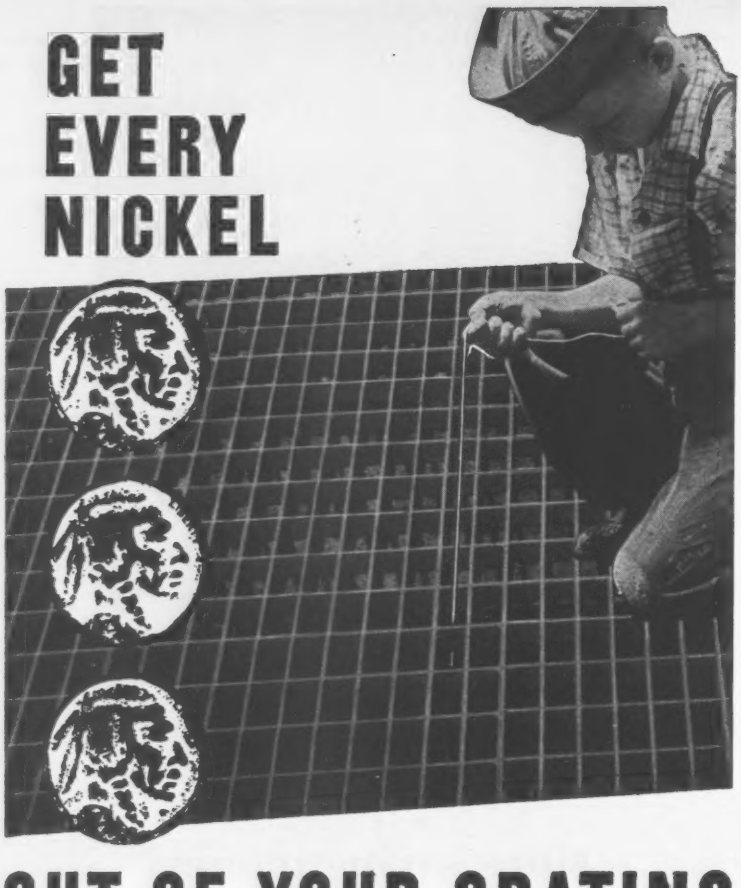
Then in installation, the system is installed quickly, easily with your own men. Once in operation . . . savings continue. Transite's maintained flow characteristics keep pumping costs low, reduce maintenance to a negligible minimum.

You'll want to get all the facts on Transite Pipe. How it is assembled . . . best ways to make riser connections . . . why it never tuberculates or rusts—all the facts you need are in the new 6-page brochure, TR-212A "Irrigating Landscaped Areas." Write for it today.

JOHNS-MANVILLE JM PRODUCTS

JOHNS-MANVILLE
Box 14 PM, New York 16, N.Y.

GET EVERY NICKEL



OUT OF YOUR GRATING

When you select a grating there's one way to be sure you are getting every nickel's worth of value out of it. Specify IRVICO. You pay only the fair, competitive price. You get superior workmanship, perfect fit, and dependable service. Those are the things which make every nickel really count; that save you dollars in the long run.

IRVICO gratings are available in every type: riveted, welded, pressure-locked; custom fabricated and engineered to meet your exact job requirements.

Catalog on request

IRVICO IRVING SUBWAY GRATING CO., Inc.

ORIGINATORS OF THE GRATING INDUSTRY
EST. 1902

Offices and Plants at: 5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 20, CALIFORNIA

corner Galbraith and Winton Rd., CINCINNATI, O. J. S. Wald & Assocs., 2565 W. Galbraith St., North College Hill, Cincinnati, O., engrs.

▲ **A. L. Jackson Co.,** 300 W. Washington St., Chicago, Ill., CA **$5,500,000,** 20 story OFFICE addn., Michigan and Jackson Blvd., CHICAGO, ILL. Continental Casualty & Assurance Co., 310 S. Michigan Ave., Chicago 4, Ill. Naess & Murphy, 224 S. Michigan Ave., Chicago 4, Ill., archts. Awarded Feb. 26. CD 12/1/52.

▲ **Mercury Builders,** 651 S. Harlem Ave., Forest Park, Ill., CA **$3,500,000,** 32 unit SHOPPING CENTER, 3,300 car parking, 127th St., Ridgeland Ave., PALOS HEIGHTS, ILL. Scope & Assocs., 117 Kedzie St., Evanston, Ill. Awarded Feb. 26. CD 4/7.

▲ **Erickson-Lindstrom Constr. Co.,** 310 Sill Bldg., Flint, Mich., CA **$3,897,044,** 10 story OFFICE, 3 story COURT OFFICES, LANSING, MICH. Bd. Water & Light, 116 W. Ottawa St., Lansing, Mich. Awarded Feb. 26. CD 2/25.

▲ **Long Island Homes, Inc.,** 3801 W. Good Hope Rd., Milwaukee, Wis., CA Est. **$1,750,000,** 33 APARTMENTS, MILWAUKEE, WIS. American Federation of State County & Municipal Employees, 2924 W. Clybourn St., Milwaukee, Wis. CD 8/19.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 18 Minnesota

▲ **Tex., Andrews**—HIGH SCHOOL—BA 3/25—Andrews Ind. School Dist., high school. $2,211,886. Plans deposit $100. Reid, Rockwell, Banwell & Tarics, 1019 Market St., San Francisco, Calif., archts.-engrs. CD 12/15.

▲ **Colo., Denver**—PLANT—BA 3/30—Great Western Aggregates, Inc., Boston Bldg., lightweight aggregate plant, Proj. 564, one kiln operation. $3,000,000. Stearns-Roger Mfg. Co., 660 Bannock St., engr. CD 1/18, under LB.

▲ **Tex., Garland**—POWER PLANT—BA 4/5—City, Pub. Wks. Dpt., City Hall, 3 story, 110x100 ft. electric Power Plant, Unit 4. $2,500,000. Tippett & Gee, 1333 N. 2nd St., Abilene, engrs. CD 10/3/58.

HEAVY CONSTRUCTION—LB & CA

▲ **ARKANSAS**—State Hy. Dpt., State Capitol, Little Rock, Bids opened 3/2,
Foster & Creighton Co., American National Bank Bldg., Nashville, Tenn., LB **$3,763,205** (9 bidders), 1.193 mi. Interstate Highway 30 between 2 and 19 Sts., North Little Rock, Pulaski Co. CD 2/15.

▲ **COLORADO**—State Hy. Dpt., 4201 East Arkansas, Denver,
Colorado Constructors, Inc., 725 W. 39 Ave., Denver, Colo., CA **$1,743,986,** (7 bidders), grading, structures, plant mixed b. surf. and twin tunnels, 2.032 mi. Colorado Combined Projs. No. I-70-3 (4) 250 and I-70-3 (2) 251 Unit 2, Clear Creek Co. Bids Feb. 25. CD 2/29, under LB.

BUILDINGS—LB & CA

▲ **Patti Constr. Co.,** 1340 Admiral Blvd., Kansas City, Mo., CA **$2,129,000,** (8 bidders), general contract 13 story, 160 unit, concrete block, brick, steel L-shaped APARTMENT, incl. 4 story parking, between Wornall Rd. and J. C. Nichols Parkway, KANSAS CITY, MO. Parkway Towers, Inc., c/o Herbert Duncan & Assocs., archts., 4049 Penn., Kansas City, Mo. Bids Feb. 16; **Edw. W. Lochman P. & H. Co.,** 1421 Cherry, Kansas City, Mo., LB **$456,000,** (7 bidders), mechanical work, apartment, etc. (Kansas City, Mo.).

▲† **Base Procurement Office,** Whiteman Air Force Base, Knob Noster, Mo., received no bids Feb. 24, 504 units 1 & 2, Capehart HOUSING, Whiteman Air Force Base, KNOB NOSTER, MO. **$9,000,000.** Will re-advertise. Williamson, Loebsack & Assoc., P.O. Box 1219, Topeka, Kan., archts. CD 2/2.

▲ **Badger Mfg. Co.,** 230 Dent St., Cambridge, Mass., CA **$2,750,000,** design and construct ethylbenzene and polubutene PLANT, BIG SPRING, TEX. Cosden Petroleum Corp., Petroleum Bldg., Big Spring, Tex. CD 12/24.

▲ **Austin Co.,** 1300 N. Post Oak St., Houston, Tex., CA **$2,000,000,** design and construct, 1 story, 505,600 sq. ft., concrete, steel DISTRIBUTION CENTER, north of 2600 West 7th St., FORT WORTH, TEX. Montgomery-Ward Co., 619 W. Chicago St., Chicago, Ill. Austin Co., 1300 N. Post Oak St., Houston, Tex., archt.

▲ **Claude Everett Constr. Co.,** 2712 Danville St., Houston, Tex., LB **$2,237,882,** bulk materials HANDLING PLANT UNIT, HOUSTON, TEX. Harris County Houston Ship Channel Navigation Dist., 1519 Capitol Ave., Houston, Tex. E. B. Mansfield Co., 12 W. Shaw St., Houston, engr. Bids Feb. 24. CD 2/25.

▲ **Tellepsen Constr. Co.,** 1710 Telephone Rd., or P. O. Box 2536, Houston, Tex., LB **$2,022,400** Base Bid 12 story OFFICE, **$286,162,** AUTO PARKING GARAGE, HOUSTON, TEX. L & R Building Co., Century Bldg., Houston, Tex. Walter P. Moore, 2 Pinedale St., and I. A. Naman & Associates, 3305 Montrose Blvd., Houston, Tex., engrs. for auto parking garage. Bids Feb. 23. CD 2/12.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 22 Idaho March 30, 31 California

▲ **Wash., Seattle**—PIER 28 IMPRVS.—BA 3/22—Port of Seattle, Bell St. Terminal, dredging and 1,380 lin. ft. concrete apron at Pier 28. $2,000,000. Plans deposit $50. G. T. Treadwell, c/o owner, ch engr. CD 5/28.

▲ **Alaska, Fairbanks**—AIRPORT IMPRVS.—BA 3/23—State Dpt. P. Wks., Juneau, grading, drainage for 4,300 ft. runway extension of Fairbanks International Airport. $2,500,000. T. D. Bourne Assocs. of Alaska, Inc., Anchorage, Alaska, engr. CD 6/16.

▲† **Calif., Fort Ord**—AVIATION FACILITIES—BA 3/24—U. S. Eng., 180 New Montgomery St., San Francisco, airfield lighting sys., incl. lighting vault and station beacon on water tower, 20,000 ft. hangar, aircraft fuel storage and dispensing, incl. storage bldg., access and parking apron, etc., ENG 04-203-60-29. $1,500,000. Plans deposit $8.60. CD 2/25.

▲† **Alaska**—COMMUNICATIONS FACILITIES—BA 3/31—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., communications facilities, Boswell Bay, Yakataga and Ocean Cape, Inc. 60-27, $4,000,000. CD 12/7.

BUILDINGS—BA

▲ **Calif., Sacramento** — HEADQUARTERS OFFICE — BA 3/29—State Div. Architecture, 1120 N St., First Phase, structural steel framing and steel decks and stairways for 6 story headquarters office for Dpt. Motor Vehicles. $2,000,000. Total cost $12,500,000. CD 6/17.

▲ **Wash., Bellingham**—DORMITORIES, etc.—BA 3/29—Western Washington College of Education, 5 story, 41,600 sq. ft., rein.-con. women's residence hall, three 2 story, 23,260 men's residence halls, and 1 story, bsmnt., 26,900 sq. ft., rein.-con. dining hall, $1,700,000. Plans deposit $50. Paul Thiry, 800 Columbia St., Seattle, archt. CD 2/15.

BUILDINGS—SLC

▲ **Calif., Richmond** — RESEAROH CENTER — Stauffer Chemical Co., 1415 South 47th St., soon lets contract rein.-con. wing design Research Center. $1,600,000. Gerald M. McCue & Assoc., 2007 Hopkins St., Berkeley, archts. CD 2/11/60.

▲ **Calif., San Diego**—HOME FOR RETIRED—Neptune & Thomas, archts., 742 Colorado Blvd., Los Angeles, soon lets contract home for the retired in Pacific Beach for Pacific Homes Development Co., 5250 Santa Monica Blvd., Los Angeles, Calif. $3,500,000. CD 2/9.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
Griffith Co., 1060 S. Broadway, Los Angeles, Calif., CA **$8,209,756,** grading, surf. to provide 4.6 mi. six lane freeway US 101 between Telephone Rd. and Palm St. through Ventura, incl. 10 structures, VEN-2-C, VEN; Ventura Co. Bids Feb. 11. CD 2/17, under LB.

▲† **Paul Hardeman, Inc.**, 10579 Dale Ave., Stanton, Calif., CA **$10,888,178,** est. $20,417,859 propellant loading sys., prefabs and interconnecting piping, Ballistic Missile Operational and Test Facilities Atlas Bases at Vandenburg Air Force Base, Lompoc, Calif., Schilling Air Force Base, Salina, Kan., Lincoln Air Force Base, Lincoln, Neb., Altus Air Force Base, Altus, Okla., Walker Air Force Base, Rosewell, N. M., Plattsburgh Air Force Base, Plattsburgh, N. Y. and Dyess Air Force Base, Abilene, Tex., ENG 41-443-60-16, CALIFORNIA, KANSAS, NEBRASKA, OKLAHOMA, NEW MEXICO, NEW YORK and TEXAS. U. S. Eng., Box 1660, Fort Worth, Tex. Awarded Feb. 29. CD 2/19, under LB.

▲ **White Diesel Engine Div. of White Motor Co.**, 1401 Sheridan St., Springfield, O., CA **$4,524,893,** (3 bidders), furnish electrical generator sets for Ballistic Missile Operational and Test Facilities at Vandenberg Air Force Base, Lompoc, Calif., Shilling Air Force Base, Salina, Kan., Lincoln Air Force Base, Lincoln, Neb., Altus Air Force Base, Altus, Okla., Dyess Air Force Base, Abilene, Tex., Walker Air Force Base, Roswell, N. M., Plattsburg Air Force Base, Plattsburg, N. Y., ENG 23-028-60-39, CALIFORNIA, NEBRASKA, KANSAS, OKLAHOMA, TEXAS, NEW MEXICO, NEW YORK. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Feb. 25, awarded Feb. 26. CD 2/25, under LB.

▲† **Baldwin Contg. Co., Inc.**, 9 and Yuba Sts., Marysville, Calif., CA **$7,145,258,** Group Hangars Nos. 2, 3 and 4, incl. utilities and paving (Part S) Naval Air Station, NBy-25181, LEMOORE, CALIF. Dist. P. Wks. Office, 12th Naval Dist., Rm. C112, San Bruno, Calif. Bids Feb. 3. CD 2/11, under LB.

▲† **Montgomery Ross Fisher, Inc.**, 10835 Santa Monica Blvd., Los Angeles, Calif., CA **$1,547,000,** barracks, Marine Corps Air Facility, IFB Spec. 25898/59B, SANTA ANA, CALIF. Dist. P. Wks. Office, Eleventh Naval Dist., San Diego, Calif. Bids Jan. 29. CD 2/3, under LB.

BUILDINGS—LB & CA

▲† **Peter Kiewit Sons Co., Inc.**, 1300 Aloha St., Seattle, Wash., CA **$1,627,772,** FAMILY HOUSING UNITS, Big Delta, Inv. 60-21, FORT GREELY, ALASKA. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids Jan. 28. CD 2/2, under LB.

▲ **Cosmopolitan Bldrs., Inc.**, 46 Etruria St., Seattle, Wash., Day Labor, **$1,600,000,** MOTEL, 18601 Pacific Hy. S., SEATTLE, WASH. Ayer & Lamping, 1314 E. John St., Seattle, Wash., archts. CD 2/3.

▲ **Gordon H. Ball Constr. Co.**, 2725 Concord Ave., Concord, Calif., CA **$2,249,999,** expansion COLLEGE FACILITIES, incl. Administration Bldg., Student's Center, Gym, Drama and Music Bldg., Library, 2 Academic Bldgs., Dormitories, Science Bldg., Industrial Bldg., AUBURN, CALIF. Sierra Junior College Dist., 222 Finley St., Auburn, Calif. Bids Feb. 4. CD 2/9, under LB.

▲† **U. S. Eng.**, 180 New Montgomery St., San Francisco, Calif., cancelled bids to have been opened Jan. 28, 140 units Capehart HOUSING, ENG-04-203-60-17B, CAMP IRWIN, CALIF. **$2,000,000.** CD 1/21.

▲ **Tom E. Norcross**, 6053 Atlantic Ave., Long Beach, Calif., LB **$3,332,778,** (5 bidders), Palos Verdes HIGH SCHOOL, Palos Verdes, LOS ANGELES, CALIF. Bd. Educ., 1426 S. San Pedro St., Los Angeles, Calif. Bids Feb. 26. CD 2/2.

▲ **Continental Heller Constr. Co.**, 4671 24th St. Rd., Sacramento, Calif., CA Approx. **$2,250,000,** 3 story, lower level, 160,000 sq. ft. DEPARTMENT STORE, Watt and El Camino Aves., near SACRAMENTO, CALIF. Weinstock Lubin & Co., 12th and K Sts., Sacramento, Calif.

▲ **Cahill Bros. Inc.**, 350 Sansome St., San Francisco, Calif., CA **$15,000,000,** 18 story I-shaped HOTEL, Mason, Ellis, O'Farrel and Taylor Sts., SAN FRANCISCO, CALIF. Hilton Hotel Corp., 401-7th Ave., New York, N. Y. Wm. B. Tabler, Hotel Statler, 401-7th Ave., New York, N. Y., archt. Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, N. Y., engrs. CD 5/11.

▲ **Foster-Marsch Corp.**, 3911 Pacific Work, San Diego, Calif., CA **$3,036,000,** general contract 1st Phase, Ventura SCHOOL FOR GIRLS, for Department Youth Authority, VENTURA, CALIF. State Div. Architecture, 1120 N St., Sacramento, Calif. Grand total $4,920,-274. Bids Jan. 27. CD 2/3, under LB.
John Taft Electric Co., 2323 E. Main St., Ventura, Calif., CA **$692,800,** electrical work for Ventura School for Girls (Ventura, Calif.). CD 1/29, under LB.
E. O. Nay Co., Inc., 2014 E. Colorado St., Pasadena, Calif., CA **$1,191,474,** mechanical work for Ventura School for Girls (Ventura, Calif.). CD 2/3, under LB.

▲† **Hawaiian Dredging & Constr. Co., Ltd.**, 1350 Ala Maana, Honolulu, Hawaii, LB **$11,928,440,** (5 bidders), 481 units (No. 20) Capehart HOUSING, Fort Shafter; 385 units (No. 2) Capehart HOUSING, Schoefield Barracks, ENG 94-612-60-11B, HONOLULU, HAWAII. U. S. Eng., P. O. Box 224, Honolulu, Hawaii. Bids Feb. 27. CD 1/7.

CANADA

BUILDINGS—BA

▲ **Man., Winnipeg**—OFFICE—BA 4/5—Monarch Life Assurance Co., Toronto-Dominion Bank Bldg., 5 story, head office, Broadway Ave. **$2,000,000.** Smith, Carter, Searle Assocs., 65 Dewdney Ave., archts. (Correction—bid date). CD 2/26.

HEAVY CONSTRUCTION—LB & CA

▲ **Louis Donolo (Ontario) Ltd.**, 2790 Dufferin St., Toronto, Ont., CA **$2,121,801,** blower and heating bldg., sewage treatment plant, Ashbridges Bay TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St., Toronto, Ont. Awarded Feb. 24. CD 2/15, under CA.

▲ **Peter Kiewitt & Sons of Canada, Ltd.**, 1587 W. 8th St., Vancouver, B. C., **A. Johnson Constr. Co. Ltd., Poole Constr. Co. Ltd.**, Hamilton and 8th Sts., Regina, Sask., LB **$8,064,175,** (8 bidders), South Saskatchewan River Project, down stream portion of tunnels South Saskatchewan River Dam, incl. excavating approx. 10,000 ft. tunnel, outside diameter in excess of 25 ft., rein.-con. lining approx. 30 In. thick, Regina, SASKATCHEWAN. Prairie Farm Rehabilitation Admin., Motherwell Bldg., Regina, Sask. Bids Feb. 24. CD 1/6.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Westinghouse Electric Corp.**, 3 Gateway Center, Pittsburgh, Pa., U.S.A., CA Est. $14,000,000, design and construct THERMAL POWER PLANT, Lower California, MEXICO. Federal Electric Comn., Govt. of Mexico, Mexico City, Mexico.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—BA

▲† **Canal Zone**—REPLACE DOCK, etc.—BA 3/21—Office Engineering and Constr. Dir. Panama Canal Co., Balboa Heights, rein.-con. 460 ft. long dock, supported on 16 in. concrete filled steel pipe piles, concrete encased railroad track rubber dock fenders, electrical,

GET EVERY NICKEL ••• OUT OF YOUR GRATING

specify IRVICO for
★Superior Workmanship
★Perfect Fit
★Dependable Service

The Test of Time: Some of the original Irving gratings are still being used in sidewalks over the subways of New York City after more than half a century of pounding by millions of feet. That performance record can't be matched by any competitive product.

Take advantage of over 50 years experience in the grating business. Consult the Irving Sales Engineer in your area for advice on your grating job. Or write today for free literature on

Riveted Welded or Pressure-Locked Gratings in steel, aluminum, and other metals. Catalog on request

IRVICO®

IRVING SUBWAY GRATING CO., Inc.
Originators of The Grating Industry Est. 1902

Offices and Plants at:
5063 27th St., LONG ISLAND CITY 1, N.Y.
1863 10th St., OAKLAND 20, CALIFORNIA

The "Keystone" of Efficiency

Kinnear originated the efficient door curtain of **interlocking steel slats**...introduced the **single-shaft torsion spring** that gives **uniform regulation** of operating ease from a **single adjustment wheel.** Kinnear's **coiling upward action** is your best investment in doorway service and protection! Write for free catalog!

The KINNEAR Manufacturing Co.

KINNEAR ROLLING DOORS — Saving Ways in Doorways

1820-40 Fields Avenue, Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.

PHOENIX BRIDGE COMPANY

Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS

AISC

General Office and Shops
PHOENIXVILLE, PA.

Subsidiary—Phoenix Steel Corporation

CONTRACTORS' TRAILERS

"Sale or Rent" Sale as low as $995.00
Rent as low as $80.00 per month.

Completely equipped with toilet, water heater, desks, drafting table, BX wiring, oil or gas floor heat, screens thruout—many other features! All Sizes built to order. High in Quality—Low in Price!

NASSAU TRAILER & MOTOR SALES
2351 JERICHO TPKE.
Garden City Park, L.I., N.Y. PI 6-1401

water and air utilities, cathode protection sys. and timber pile dolphins at Dock 14, Mount Hope. Extended date. Plans deposit $50. CD 1/4.

HEAVY CONSTRUCTION—LB & CA

▲† **Foster Constr. Co. & Williams Bros.,** National Bank of Tulsa Bldg., Tulsa, Okla., LB **$6,353,500** (23 bidders), widen Empire Reach, Panama Canal, CANAL ZONE. Panama Canal Co., Canal Zone, Balboa Heights, Canal Zone, Bids Feb. 29. CD 12/31.

▲† **CANAL ZONE**—Panama Canal Co., Balboa Heights, **John F. Beasley Constr. Co.,** Mercantile Bank Bldg., Dallas, Tex., CA **$9,119,000,** superstructure of Balboa Bridge over Panama Canal. Bids Dec. 2. CD 12/4, under LB.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **India**—POWER STATION—BA 3/30—Govt. of West Bengal, New Secretariat Bldgs., 1 Hastings St., Calcutta-1, power station equipments for Durgapur Thermal Power Station (extension), Spec. No. DTPS-5.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Minn., Roseville (St. Paul 13)**—Village, Village Hall, 2701 N. Lexington Ave., water supply sys. **$5,000,000.** Banister Engineering Co., 310 Snelling Ave. N., St. Paul, engr. CD 2/11.

▲ **Tex., Denton**—City, City Hall, WW sys. **$2,000,000.** Freese, Nichols & Endress, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 2/10.

▲ **Tex., Waco**—City, City Hall, 20 m.g. daily water treatment plant, temporary line from lake, temporary outlet works. **$2,400,000.** Joe J. Rady & Co., Insurance Bldg., Fort Worth, consult. engrs. CD 2/18.

SEWERS, WASTE DISPOSAL

▲ **Tex., Denton**—City, City Hall, sanitary sewerage sys. **$2,000,000.** Freese, Nichols & Endress, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 2/10.

▲ **Utah, Salt Lake City**—Salt Lake City Corp., City-County Bldg., Redwood Rd. Sewer trunkline. **$3,000,000.** Clyde C. Kennedy, 604 Mission, San Francisco, Calif., engr. CD 8/30/54.

BRIDGES

▲ **NORTH CAROLINA**—State Hy. Comn., State Bldg., Raleigh,
Carteret Co.—bridge from Beaufort to Morehead City. **$6,000,000.** CD 8/23/56.

STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 24 Wolcott Hill Rd., Wethersfield,
Cheshire and Meriden, etc.—Interstate Rte. 84 from Interchange in Southington easterly 7.3 mi. to 450 ft. east of N. Wall St., Meriden. **$7,000,000.** Steinman, Boynton, Gronquist & London, 117 Liberty St., New York 6, N. Y., consult. engrs.

▲ **NEW HAMPSHIRE**—Dpt. P. Wks. & Hys., Concord,
Rockingham and Hillsboro Counties—Interstate Hy. from Massachusetts border to Salem. **$4,250,000.** To go ahead in June.
Rockingham Co.—road from Exeter to Hampton Beach. **$4,000,000.** To go ahead in 1961.

▲ **N. J., Jersey City**—Hudson County Boulevard Comn., 2857 Boulevard, Jersey City, reconstr. Hudson Boulevard. Total **$10,000,000.** Thourot & LaMort, 320 Summit Ave., consult. engrs.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Allegheny Co.—Etna-Sharpsburg Bypass for Rte. 28, **$15,000,000.**
reconstr. about 10 mi. Rte. 22 between Moon Run and Allegheny-Washington County Line, **$5,665,000.**
Allegheny, Armstrong and Jefferson Counties—reconstr. Rte. 28, between Pittsburgh and Brookville, **$75,000,000.**
Fayette Co.—reconstr. Rte. 119, between Uniontown and West Virginia State Line, 35 mi., **$25,000,000.**
Washington and Allegheny Counties—rebuild Rte. 88 between North Charleroi, Washington Co. and Fort Pitt Tunnel, Pittsburgh, about 25 mi., **$50,000,000.** F. S. Poorman, c/o owner, engr.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Allegheny Co.—Ohio River Blvd. extension, Rte. 88, **$25,000,000.**
reconstruct Rte. 48 between Rte. 51 and Oakmont as expressway. **$35,000,000.**
Washington and Greene Counties—imprv. about 5 mi. Rte. 88 between Vestaburg, Washington Co. and Rices Landing, Green Co. **$750,000.** F. S. Poorman, c/o owner, engr.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Bedford Co.—reconstruction 3 mi. U. S. Rte. 30 between Wolfsburg and Bedford, **$1,600,000.**
Everett Bypass for U. S. Rte. 30, **$500,000.**
Fulton Co.—McConnellsburg Bypass for U. S. Rte. 30, **$750,000.**
Mifflin Co.—reconstruction about 4 mi. U. S. Rte. 322 between Milroy and Centre County Line, **$3,500,000.** F. S. Poorman, c/o owner, staff engr.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Bucks Co.—relocation U.S. Rte. 1, between Philadelphia city Line and Langhorne, 5.52 mi., **$2,500,000.** Erdman, Anthony & Hosley, Inc., 1835 N. 3 St., Harrisburg, consult. engr. F. S. Poorman, c/o owner staff engr. CD 1/12.

▲ **Tex., Denton**—City, City Hall, streets imprvs., paving, drainage. **$2,400,000.** Freese, Nichols & Endress, 407 Danciger Bldg., Fort Worth, Tex., consult. engrs. CD 2/10.

EARTHWORK, WATERWAYS

▲† **Washington** — Snohomish County Soil Conservation Dist., Court House, Everett, floodways and dikes in Marshland and French Creek areas. **$4,250,000.** Stevens & Thompson, 2234 S.W. 5th Ave., Portland, Ore., engrs. CD 9/29.

AIRPORTS

▲ **Tex., Fort Worth** — AIRPORT, etc. — Sphere, Inc., Ridglea State Bank Bldg., plans by Harkrider, Clark & Jones, 1004 T & P Bldg., constr. Airport & Terminal Bldg., 20 double hangars, 240 "T" hangars and 125-unit motel on Highway 81, approx. 8 mi. south of here. **$7,000,000.**

FOREIGN

▲ **Indonesia**—POWER PLANT—Republic of Indonesia, Jakarta, thermal electric power plant. **$14,300,000.** Import-Export bank made loan.

AMERICANS ABROAD

▲ **England, Liverpool**—PLANT—Ford Motor Co. of England, sub. Ford Motor Co., American Rd., Dearborn, Mich., U.S.A., auto body and assembly plant at Halewood, near here. **$70,000,000.**

PUBLIC BUILDINGS

▲ **Ala., Birmingham**—HOSPITAL—State of Alabama, Montgomery, voted **$3,000,000** bonds Feb. 16, 100 bed hospital for mentally ill, to be part of Alabama Medical Center. CD 1/18.

▲ **Ala., Huntsville**—SCHOOLS—City, City Hall, voted **$2,500,000** bonds Feb. 16, 2 Junior High Schools and 3 elementary schools. CD 1/28.

▲ **Calif., Chico**—SCHOOLS—Pleasant Valley Elementary School Dist., 988 East Ave., $200,000 bond election Apr. 26 and $2,000,000 State Aid Loan Approval, schools. **$2,200,000.** Lawrence G. Thomson, 125 W. Third St., archt.

▲ **Calif., Los Angeles**—HARBOR COLLEGE ADDNS.—Los Angeles Bd. Educ., 1425 S. San Pedro St., plans by A. L. Zimmerman, 2439 Hyperion Ave., 10 Harbor College bldg. addns., 1111 Figueroa Pl., Wilmington. **$3,750,000.** CD 6/9/58.

▲ **Calif., Norwalk** — SCHOOLS — Excelsior Union High School Dist., 1793 S. Pioneer St., Artesia, voted **$3,500,000** bonds Feb. 9, two high schools. CD 10/5.

▲ **Fla., Clearwater**—COUNTY, etc.—Pinellas Co., Court House, 7 story, county bldg., 5 story, courthouse, and 2 story jail addn. **$7,800,000.** Rader & Assocs., 611 First Ave. N., St. Petersburg, consult. engrs.

▲ **Ill., Wheaton**—COUNTY HOME—DuPage Co., 201 Reber St., bond election June 6, county convalescent home, County Farm Rd. **$5,000,000.**

▲ **Ky., Winchester** — SCHOOL — Clark Co. Bd. Educ. plans by Brock & Johnson, 159 Barr St., Lexington, high school. **$1,000,000.**

▲ **Mo., University City (St. Louis 30 P.O.)**—SCHOOLS—Bd. Educ. School Dist. of University City, 6701 Delmar Blvd., voted **$2,250,000** bonds Feb. 17, Senior High School and two Junior High School addns. **$2,250,000.** CD 12/15.

▲ **Pa., Barnesboro**—SCHOOL—P. School Bldg., 101 S. 25 St., Harrisburg, Secondary School for North Cambria Joint School Dist. **$2,000,000.**

▲ **Tex., Denton**—PLANT ADDN.—City, City Hall, electric generating plant addn. **$4,750,000.** Black & Veatch, 1500 W. Meadow Lake Parkway, Kansas City, Mo., consult. engrs. CD 2/10.

▲ **Tex., Fort Worth**—HOUSING UNITS—Fort Worth Housing Authority, 500 W. Belknap St., 272 housing units in I. M. Terrell Area. **$2,000,000.**

COMMERCIAL BUILDINGS

▲ **Ala., Dothan**—SHOPPING CENTER— John W. Powers, Jr. & Julian Turner, 10 S. 14 St., Birmingham, plans by Joseph L. Donofro & Assocs., 190,000 sq. ft. shopping center, 2,000 car parking, Ross Clark Traffic Circle, off U.S. 231 N. **$2,250,000.** Constr. fall 1960.

▲ **Calif., Napa**—APARTMENTS—Randolph Parks & Assocs., 2800 El Camino Ave., Sacramento, plans by Farnum Kerr & Assocs., archts.-engrs., 1661 Trancas, P.O. Box 117, River Park Estates Proj., apartment development, to incl. 420 dwelling units, motor hotel, trailer home facilities, etc., 220 acres. **$23,867,500.**

▲ **Calif., San Francisco**—APARTMENTS—Belle Haven Realty Co., 1420 E. 3rd Ave., San Mateo, plans by Barbachano, Ivanitsky & Watanabe, 11484 San Pablo Ave., El Cerrito, two 20 story apartments, swimming pool, Green and Taylor Sts. **$3,500,000.**

▲ **Fla., Miami** — HOSPITAL — Bd. Governors, National Children's Cardiac Hospital, 4250 W. Flagler St., 200-bed hospital, 4 acre site NW 10 Ave. and 17 St. **$2,500,000.**

▲ **Hawaii, Honolulu**—APARTMENT HOTEL, etc.—J. W. Driver & Guy K. Harrison, 9876 Wilshire Blvd., Beverly

Hills, Calif., 21 story Ala-Wai cooperative apartment hotel, car parking, swimming pool. $15,000,000.

▲ Ill., Joliet—HOSPITAL—St. Joseph Hospital, 372 N. Broadway Ave., plans by Foeller, Schobar, Berners, Safford & Jahn, 310 Pine St., Green Bay, Wis., hospital addn. $8,000,000. CD 1/25/57.

▲ Iowa, Davenport—Y.M.C.A. and Y.W.C.A.—Young Men's Christian Assn., 402 Harrison St., and Young Women's Christian Assn., 209 W. 4 St., Y.M.C.A. and Y.W.C.A. $2,230,000. CD 11/25/55.

▲ Mass., Boston—PUBLIC HEALTH, SCHOOL, etc.—Harvard University, Harvard Square, Cambridge, public health school, nutritional laboratories, Huntington Ave. and Shattuck St. Approx. $2,000,000.

▲ Mass., Concord—BOYS HIGH SCHOOL—R. C. Archdiocese of Boston, Chancery Office, 1 Lake St., Brighton, boys high school. $3,000,000. Constr. 1960.

▲ N. J., Trenton—OFFICE and SHOPPING CENTER—Louis Cahan, 140 West State St., office addn., Pennington Rd. and Parkside Ave., Ewing Twp., $1,500,000; 2 story shopping center, Scotch Rd., Ewing Twp. $2,500,000. Will go ahead in 2 or 3 months.

▲ N. J., Trenton—HOUSES—Abraham Hay, 1936 Riverside Dr., 103 houses, Mountain View and Bear Tavern Rds., Ewing Twp. $3,200,000.

▲ N. Y., New York—APARTMENT—Beekman Plaza, Inc., 141 Broadway, Zone 6, plans by Robert L. Bien, 342 Madison Ave., Zone 17, apartment, 408-24 East 51st St. $2,000,000.

▲ N. Y., New York—HOTEL TAFT addn.—Webb & Knapp, Inc., 383 Madison Ave., New York, N. Y., plans by William B. Tabler, 401 7th Ave., 17 story Hotel Taft addn., $10,000,000.

▲ O., Cleveland—SCHOOL—Cleveland Institute of Music, 3411 Euclid Ave., Zone 15, plans by Schafer, Flynn & Williams, 1740 E. 12 St., Zone 14, school, E. Blvd. $2,000,000. Bids in Spring. CD 1/6/56.

▲ O., Painesville — HOMES — Cedar Hills Co., c/o Edward A. Eisele, Jr., Williamson Bldg., Cleveland, Zone 14, 100 homes, North-South Freeway, Vrooman Rd. interchange, $3,000,000.

▲ Ore., Salem—SHOPPING CENTER—State Finance Co., 167 High St. S.E., shopping center, $8,000,000.

▲ S. D., Rapid City—ACADEMY, etc.—Benedictine Sisters of St. Martin, west of Rapid City, plans by Mark F. Pfaller Assocs., 7613 W. State St., Wauwatosa 13, Wis., academy, convent. $3,000,000.

▲ Tex., Mesquite—SHOPPING CENTER—Shareco, Inc., 2530 Cedar Springs St., Dallas, Shopping Center, $2,000,000; area and Auto Center pavement, $90,000; site earthwork, $58,000.

▲ Tex., San Antonio—SHOPPING CENTER, etc.—S. E. & G. S. McCreless, 1130 Fair Ave., plans by Phillip Lloyd Shoop, 122 W. Olmos Dr., and Noonan, Thompson & Krocker, 2002 N. St. Marys St., Regional Shopping Center, $10,000,000; 5 story office, $750,000; 100-room hospital, $900,000 in Highland Park area, 63-acre site. CD 9/5/58.

▲ Tex., San Antonio—APARTMENT, etc.—Robert Morehead, c/o Preston Forest Shopping Center, and Lloyd Baxter, 4165 Meadowdale St., Dallas, plans by John E. Taylor, 3747 McMillan St., Dallas, "Bali Hai" Apartment, $3,250,000; paved flooring and semi-enclosed parking center, $150,000; swimming pool, $90,000, E. Mulberry, off Broadway Ave.

INDUSTRIAL BUILDINGS

▲ Ill., Harvey—ENGINE PLANT—Allis Chalmers Mfg. Co., 1126 S. 70 St., Milwaukee, Wis., 1 story, 515,000 sq. ft., steel cement engine plant at Harvey Works. $5,000,000.

▲ La., Baton Rouge — PLANT — Copolymer Rubber & Chemical Corp., Shada Ave., synthetic rubber plant addn. $3,000,000.

▲ Mass., Cambridge—MANUFACTURING PLANT—Simplex Wire & Cable Co., 79 Sidney St., manufacturing plant. $3,000,000. Constr. 1960.

▲ Tex., Baytown—ADDNL. CARBON BLACK PLANT, etc.—J. M. Huber Corp., 1478 Chestnut Ave., Hillside, N. J. addnl. Carbon Black Plant manufacturing unit, 300-acre tract, 8-mi. north of here, $2,800,000; site earthwork, $60,000; storage, $135,000; area and parknig center pavement, $95,500.

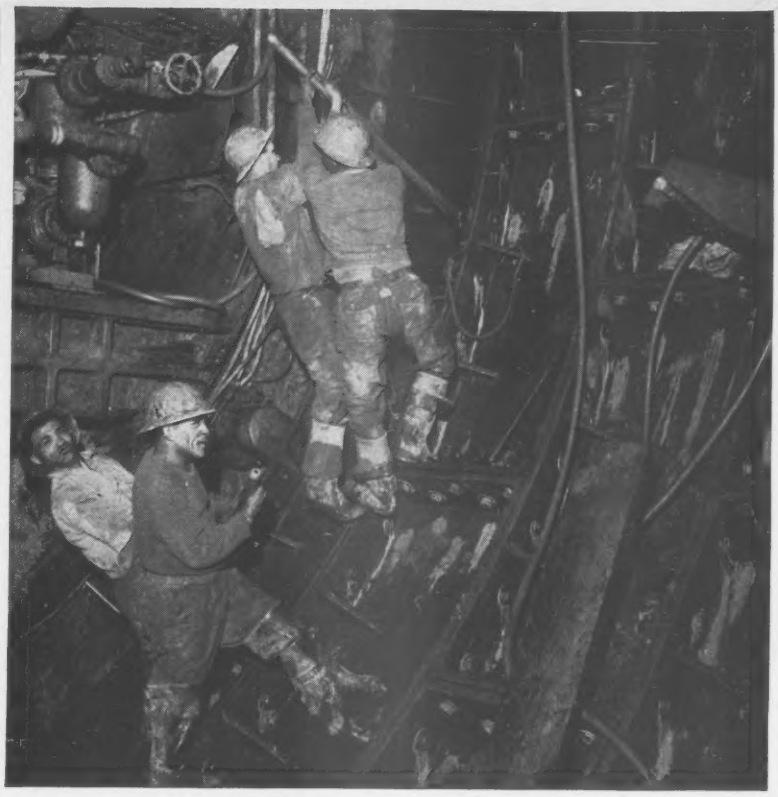
▲ Tex., Jefferson—ELECTRIC POWER PLANT—Southwestern Electric Power Co., 428 Travis St., Shreveport, La., 186,000-kw Electric power plant, Unit 1, $15,000,000; machine shop, $125,000; electric transmission lines, $300,000; outside water lines elev. storage, $75,000, 15 mi. NW. of here.

▲ Tex., Texarkana—PULP AND NEWSPRINT MILL—Anglo Southern Paper Corp., subsidiary, Texarkana Industries Inc., constr. Pulp and Newsprint Mill, $60,000,000; water dam and reservoir, Texarkana, Barkman Creek, $1,500,000; ground-development, for mill, $400,000; water pumping unit, $350,000; water tank storage, $100,000; water main from reservoir to paper mill, some laterals, $500,000; machine repair shop, $250,000; 500-acre site.

UNCLASSIFIED

† D. C., Wash.—TRAFFIC TUNNEL—National Park Service, Dpt. Interior, C St. between 18 and 19 Sts. N.W., 6-lane 1,250 ft. traffic tunnel Lincoln Memorial. $13,000,000 (no appropriation). Singstad & Baille, 24 State St., New York 4, N. Y., consult. engrs.

(Proposal Advertisements see pp. 74 to 77)



F. & C. Writes Underwater, Too!

Whether building bridges and highways, rearing a modern skyscraper or tunneling a harbor floor, ace construction men look to THE FIDELITY AND CASUALTY COMPANY OF NEW YORK for the bonds required and properly fitted insurance to give them the protection they need.

That's because veteran builders know the importance of modern skills, wide experience and efficient service. And they know they get all three from F. & C.

The Fidelity and Casualty Company of New York

"Writing Bonds Since 1876"

a member company of America Fore Loyalty Group

Construction Scoreboard

This Week . . .

AMOUNT OF CONTRACTS LET

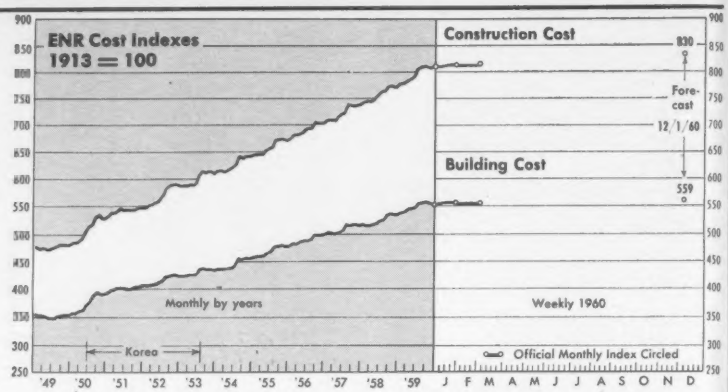
	This Week millions	Cum. 10 wks 1960	Chge '59-'60 %
All Heavy Construction	$284.5	$3,457.4	— 1
By Ownership			
PRIVATE	158.6	1,874.8	+12
PUBLIC	125.9	1,582.6	—13
State & Municipal	70.5	1,195.9	— 5
Federal	55.4	386.7	—30
By Type of Work			
PUBLIC			
Waterworks	7.3	57.4	—39
Sewerage	5.6	102.9	— 4
Bridges*	8.9	178.2	+47
Highways	26.3	439.7	—14
Earthwork, Dams & Waterways	6.1	116.0	—15
Buildings:			
Excl. Housing	37.7	340.2	—24
Housing	3.2	87.5	—28
Unclassified	30.8	261.8	— 5
PRIVATE			
Buildings:			
Mass Housing	96.0	862.5	+27
Commercial	41.2	336.1	—21
Industrial	17.9	485.3	+ 3
Unclassified	3.5	189.8	+105

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

New Construction Capital . . .

	Week of Mar. 3 millions	Cum. 9 wks 1960	Chge '59-'60 %
Corporate Securities	$ 88.3	$ 400.9	—30
State and Municipal:			
All Except Housing	129.5	1,244.3	+15
Housing	9.5	12.0	+823
Federal Loans	4.4	15.3	—10
Federal Aid	....	....	....
Total Nonfederal	$231.6	$1,672.5	+0.1
Federal Appropriations:			
Projects in U. S.	....	....	....
Outside U. S.	....	....	....
Total New Capital	$231.6	$1,672.5	+0.1



ENR COST INDEXES (1913=100) 20-cities' average	Week of Mar. 3 1960	% Change from Jan. 28 1960	% Change from Mar. 5 1959
Construction Cost	813.46*	+0.1	+4.0
Building Cost	555.16*	—0.1	+2.6

* Official Monthly Index for March, 1960.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

This Month . . .

WAGE RATES, 20-cities' average	March 1960	% Change from Feb. 1960	% Change from March 1959
Common	$2.642	+0.2	+5.6
Skilled (average 3 trades)	3.950	0	+4.1
Bricklayers	4.177	0	+3.2
Structural Ironworkers	3.982	0	+4.3
Carpenters	3.69	0	+4.7
Equipment operators (average three types)	3.582	+0.3	+1.9
MATERIAL PRICES, 20-cities' average			
Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	121.90	—0.3	+2.3
Lumber, 2x4 Pine, per M fbm	110.07	+0.1	+4.2
Cement, bulk, per bbl	4.00	0	+0.3
Sand, per ton	2.467	0	—0.6
Ready-mixed concrete, per cu yd	14.29	0	+2.4
Gypsum sheathing, ½″x2′x8′, per Msf*	63.20	—0.2	+1.0
Fiber board sheathing, ½″ sq. ed., per Msf*	73.61	0	+3.2
Mineral wool insulation, 3′ batts, per Msf*	68.43	0	—2.0
Crushed stone, 1½″, per ton, CL	2.669	—2.2	—3.0
Concrete blocks, sand/gravel, 8″x8″x16″, each*	0.233	+0.4	+3.6

Latest Month . . .

	Feb. 1960	Jan. 1960	Feb. 1959
Brick, common per M	40.42	+0.8	+6.8
Lime, hydrated finishing, per ton, CL	39.34	+1.3	+3.5
Structural clay tile, 3x12x12″, per M, 2,000 up*	188.27	+0.8	+3.1
Vitrified clay sewer pipe, std 12″, per ft	1.368	0	+2.5
Concrete sewer pipe, 12″, per ft	1.391	+1.8	+3.9

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
1959						
Jan	778.28	163.15	536.23	152.43	460	133
Feb	778.75	163.25	537.25	152.72	472	136
Mar	781.35	163.80	540.32	153.59	586	169
Apr	784.41	164.44	542.93	154.33	532	154
May	790.37	165.69	544.44	154.76	700	202
Jun	795.16	166.69	548.35	155.87	650	188
July	806.69	169.11	551.74	156.84	671	194
Aug	811.15	170.04	554.31	157.60	509	147
Sept	812.56	170.33	555.88	158.01	545	158
Oct	811.40	170.09	555.40	157.88	415	120
Nov	809.78	169.75	554.19	157.53	509	147
Dec	808.63	169.52	552.80	157.10	436	126
1959 Average	**797.39**	**167.17**	**547.82**	**155.72**	**540**	**156**
1960						
Jan	812.03	170.23	554.40R	157.57	432	125
Feb	812.93	170.41	555.43	157.92	486	163

R: revised

New Depreciation Rules in Sight

- **Administration expected to recommend updating depreciation regulations sometime in 1961.**
- **Witnesses impress House Ways and Means group with need for liberalization of tax rules.**

The long freeze over depreciation policies is beginning to show the unmistakable signs of a spring thaw. Both Congressmen and Administration officials are embarking on a new search to update admittedly outmoded U.S. depreciation policies to fit the modern facts of life, particularly in construction (ENR Nov. 12, 1959, p. 98).

Businessmen and many economists have for several years been urging the government to scrap its old tax depreciation rules. Until recently, their pleas fell on deaf ears because of the overriding concern to protect tax revenues in balancing the budget.

But the growing insistence on the need for faster writeoffs and other depreciation changes has impressed Washington officials. Last week, there were these twin developments:

- The Treasury Department mailed out questionnaires to taxpayers and businessmen soliciting their views on current depreciation practices and proposed changes in existing regulations. Responses will be used in helping to frame future changes in the tax law.
- The tax-writing House Ways and Means Committee conducted hearings into changes in present depreciation laws affecting sale of used equipment, such as bulldozers, tractors and similar machinery.

Exhaustive Ways and Means hearings last fall helped change the climate of official opinion regarding depreciation. During the sessions witness after witness protested strongly that current depreciation rules impede economic growth and are a stumbling block to industry modernization.

The shift in official views now under way gives strong indications that there will probably be Administration recommendations for liberalized depreciation next year, no matter which party wins the White House.

The hearings the Ways and Means group held last week were on legislation that would actually mark one step backward—to clear the way for changes to come.

Up for consideration is a Treasury-sponsored bill that would remove the capital gains advantages that might result in sale of used equipment. The Treasury wants instead to levy the generally higher ordinary income tax rates on profits made from sale of an asset for more than it had been depreciated.

Here's how the law, as it now stands, works:

Let's say a contractor's dump truck had been depreciated down to $500 but disposed of for $1,000. The contractor would be liable for a tax at ordinary income rates on the $500 difference.

Currently, the contractor would pay only a capital gains rate up to a maximum of 25%, or $125. Under ordinary rates, he could be taxed up to a maximum of 92%.

Treasury officials say this provision is of general benefit to many businesses, but that in practice it has so far been claimed principally by auto and truck rental companies.

What concerns the Internal Revenue Service is that this device will be increasingly used by other businesses. They want to close off this "advantage." In exchange, Treasury Secretary Robert B. Anderson promises to have his tax agents loosen up on their interpretations of general depreciation schedules.

But business representatives appearing at the hearings weren't buying. They felt they had a lever in the present law that could be used to force the Treasury to come up with more specific assurances of future depreciation liberalization.

"We're being asked to give up a one advantage in hand for a lot of good intentions," says one businessman spokesman, "and we are naturally skeptical."

At the heart of the depreciation issue is the largest single source of cash for the modernization and expansion of industry—the estimated $23 billion deducted from profits last year under depreciation and amortization regulations now in effect.

This is almost double the amount deducted in 1953. But businessmen have been arguing that it falls short of what a modern depreciation policy would allow.

There are complaints that present policies do not take into consideration the actual replacement cost of modern machinery and equipment and, second, that present policies do not recognize the swift and increasing pace of obsolescence. More liberal depreciation formulas adopted in the Revenue Act of 1954 have helped. But they do not solve these difficulties, critics contend.

The existing policies are symbolized by Bulletin F, which lists suggested useful lives for hundreds of productive items, from typewriters to power shovels. For years the Treasury Department itself has referred to the Bulletin F useful life tables as outmoded; officials readily grant that the lives suggested are too long in many cases.

Instructions have been issued to revenue agents not to apply the bulletin F tables rigidly, and to pay increasing attention to what the taxpayers themselves estimate the useful lives to be.

The preliminary moves now being taken have as one of their chief purposes a loosening of Bulletin F's grip and eventual abandonment of the whole idea of an officially approved listing of useful lives.

In one of its surveys Treasury will give respondents an opportunity to choose among different types of depreciation policy.

One possible change on the list is the Triple Declining Balance Formula, which was recommended recently by the Senate Committee on Small Business. A Double Declining Balance Formula was approved in the Revenue Act of 1954. Under the Double Declining Balance Formula, about two-thirds of the cost of an asset can be recovered in the first half of its useful life.

If the depreciation rate were further speeded by a Triple Declining Balance Formula, about four-fifths of the cost would be recovered in half the life, with the biggest deductions coming in the earliest years.

In the first year, under the present law, a $10,000 item with a useful life of 10 years is allowed a $2,000 deduction. If the Triple Declining Balance Formula were adopted, the first-year writeoff would be $3,000.

Treasury officials also listed the

(*Turn the page*)

method that a great many taxpayers are going to vote for, though its chances of adoption appear slight:

Just give every taxpayer complete freedom to decide for himself what the useful life of each item should be for tax purposes.

There are signs that the Treasury itself is especially interested in one of the methods mentioned on the survey form: the Canadian Bracket System. Instead of a wide variety of rates on individual assets, as in the U. S. system, the Canadians lump all depreciable assets into about a dozen broad categories, with a single rate for each category.

By itself, this would not necessarily liberalize depreciation; everything would depend on the rates assigned to the categories. The Senate Small Business Committee, for example, suggests a look at the bracket system combined with the Triple Declining Balance Formula.

Contract Awards Up 11% in February

A steep climb in mass housing and a a strong recovery in highway and bridge work pushed February contract awards reported by ENR to $1.4 billion, an 11% gain over January and a 6% gain over one year ago.

The recovery puts the weekly rate of construction contract awards 1% above the first two months of 1959, contrasted to a lag of 4% at the end of January.

Private construction awards still hold their lead over public work in February with a total of $799 million. This tops January by 16% and January 1959 by 4%. For the first two months, private volume totals $1.5 billion–14% above the same period last year.

Mass housing awards of $427 million in February leaped 65% above January and 27% over a year ago. The February total pushed the first two months' awards to $685 million–32% ahead of 1959's first two months. It's the fastest inflow of new housing awards since June and the best February rate since 1956.

Industrial building picked up for the third consecutive month. February's total of $212 million topped January by 9% and one year ago by 19%. The lead over last year for the first two months stands at 19%.

There was a major setback in commercial building during February–awards of $107 million were 38% below January and 45% under a year ago. It was the lowest monthly total since December 1958. Volume in the first two months is $281 million–18% behind the 1959 pace.

Most encouraging aspect of February's report is the improvement in state and municipal work. Led by roads and bridges, awards of $505 million were 21% above January and 18% ahead of one year ago. February was the second consecutive month to show gains from the low rate of December. The total cuts the lag behind one year ago from 20% in the opening month to only 4% at the end of February.

The bulge in state and local work offset the 33% drop in federal contracts awarded in February. The total of $118 million was the lowest since last September. So far this year, federal agencies have placed $294 million under contract, 25% less than last year's two-month pace.

Total public awards of $623 million rose 5% over January and 10% above one year ago. This is a steady improvement from the year-end lull, despite the slump in federal work. The $1.2 billion awarded so far this year is only 10% short of last year's rate for the first two months.

Highways accounted for most of the expansion in state and local work in February. The $203 million worth of highway contracts placed in February was 32% above January and 10% above a year ago. It was the best February pace since 1957, when the Interstate program was starting to gain speed. When bridge awards are added to those for highways, the combined volume of $458 million puts the first two months of this year within 1% of the 1959 rate.

Engineering Construction Contracts for February

	February, 1960								Two Months			
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West*	Total U. S.	% Change February '59 to '60	U. S. Cumulative 1960 (8 weeks)	1959 (9 weeks)	% Change '59 to '60 (av. wk.)	Canada February 1960
Public Works, Total	**33,294**	**125,158**	**126,748**	**73,393**	**140,506**	**123,698**	**622,797**	**+10**	**1,217,343**	**1,526,067**	**−10**	**42,307**
Waterworks	535	718	2,526	11,844	4,240	2,106	21,969	−49	41,913	77,574	−39	811
Sewerage	508	3,774	10,933	9,075	9,321	6,315	39,926	− 1	86,058	97,763	− 1	7,729
Bridges	1,321	14,704	16,237	7,391	11,453	4,546	55,652	+87	100,365	102,429	+10	2,045
Earthwork, waterways	239	900	10,761	628	6,544	26,066	45,138	+49	102,010	86,098	+33	294
Streets and roads	13,227	38,753	49,288	7,604	69,543	25,081	203,496	+10	358,242	419,890	− 4	2,114
Buildings: Residential	1,870	2,711	5,307	17,081	5,212	.....	32,181	+ 2	83,179	80,509	+16	4,750
Other	8,361	57,900	22,835	15,590	21,837	25,375	151,898	+12	255,147	412,209	−30	18,881
Unclassified	7,233	5,698	8,861	4,180	12,356	34,209	72,537	− 1	190,429	249,595	−14	5,683
State & Municipal	22,544	118,482	101,634	65,939	120,208	75,663	504,560	+18	923,214	1,082,260	− 4	30,478
Federal	10,750	6,676	25,114	7,454	20,208	48,035	118,237	−16	294,129	443,798	−25	11,829
Private, Total	**47,133**	**281,391**	**107,932**	**145,683**	**129,668**	**67,639**	**779,446**	**+ 4**	**1,449,960**	**1,436,332**	**+14**	**53,353**
Bridges	.....	800	.....	.....	.....	.....	800	....	1,059	.....	....	.....
Buildings: Industrial	1,242	43,440	65,890	51,909	38,842	11,071	212,394	+19	407,473	383,921	+19	35,840
Mass housing	36,786	195,484	27,724	67,055	57,276	42,384	426,709	+27	685,160	583,427	+32	8,420
Commercial	6,425	31,217	10,007	25,004	20,966	13,519	107,138	−45	280,799	383,941	−18	8,524
Unclassified	2,680	10,450	4,311	1,715	12,584	665	32,405	−24	75,469	85,043	− 1	568
Total Feb., 1960—4 weeks*	**80,427**	**406,549**	**234,680**	**219,076**	**270,174**	**191,337**	**1,402,243**	**+ 6**	.....	.....	....	**95,659**
Total Jan., 1960—4 weeks*	101,556	339,847	159,388	202,086	243,147	219,036	1,265,060	....	.....	.....	....	96,517
Total Feb., 1959—4 weeks*	93,020	404,709	258,727	142,701	251,018	168,268	1,318,443	....	.....	.....	....	88,544
Two Mos.—1960 (8 wks.)*	**181,983**	**746,396**	**394,068**	**421,162**	**513,321**	**410,373**	.....	....	**2,667,303**	.....	**+ 1**	**192,176**
Two Mos.—1959 (9 wks.)*	181,976	785,276	540,888	392,926	644,712	416,621	.....	....	.....	2,962,399	....	229,294
% Change '59 to '60 (Av. wk.)	+13	+7	−18	+21	−10	+11	.....	....	.....	.....	....	−16

* Includes Alaska & Hawaii Contracts.

NLRB Loses Brown-Olds Cases

- **Two more courts reject weapon used by labor board to force clean-up of hiring practices.**
- **They say only workers forced to pay a price to get or keep a job should be reimbursed**

Federal courts are slowly curbing efforts of the National Labor Relations Board to halt closed shop practices in the construction industry.

Reason: The courts say the board has failed to make its punishment fit the crime.

In two more instances Circuit Courts of Appeal (for the Fifth Circuit and for the District of Columbia) have refused to go along with the board's indiscriminate use of the Brown-Olds remedy in illegal hiring cases.

Both courts have ruled that the reimbursement remedy should apply only to workers who are clearly forced to pay union dues and assessments as the price of employment.

The remedy is used by the board to punish both contractors and unions for engaging in hiring practices that perpetuate the closed shop by discriminating in favor of union members. It calls for the repayment of all initiation fees, dues and assessments collected from workers during the operation of illegal hiring arrangements. The repayment order can be issued against contractors as well as unions.

In the Fifth Circuit case, the court refused to enforce a board order requiring a local of the sheet metal workers union to refund money it collected from workers employed by a contractor on a Ford Motor Co. project in Hapeville, Ga.

It ruled that the order could not be enforced because it was punitive rather than compensatory. The order was punitive, it said, because the board had failed to prove that the illegal hiring arrangement had been the motivating factor that compelled the payment of the money that was to be refunded. In the absence of such proof, it reasoned, a refund could not be considered a return of money illegally assessed.

In the other case, the District of Columbia court approved the reimbursement order with respect to one worker who was clearly a victim of discrimination, but it refused to enforce the order with respect to "casual employees."

This represents the third time in two months that the Brown-Olds rule has been set aside. Earlier, the Third Circuit Court of Appeals killed such an order (ENR Jan. 28, p. 191). It called refunds under the order "a windfall" to employees because they benefited workers who had met the union's demands for reasons other than the illegal hiring agreement between the contractor and the union.

The remedy has been under heavy criticism ever since the NLRB decided to use it against both contractors and unions to force compliance with its Mountain-Pacific hiring standards. It is considered unreasonably harsh and too extensive in its application. Construction unions are now hoping that Congress will upset it.

In the Georgia case, R. C. Mahon Construction Co. and Local 85 of the sheet metal workers union were found to have had a tacit agreement that only members of the local union, or those it referred, would be hired on the Ford job.

The board said the agreement was illegal because it made union membership or referral a condition of employment—a condition that is permitted only under a valid union shop clause.

It ordered the union to scrap the agreement and to reimburse a rejected applicant for the earnings he lost as a result of the union's refusal to refer him. It also issued this typically pervasive Brown-Olds order:

"Refund to all present and former employees of R. C. Mahon Construction Company any initiation fees, dues, assessments, or any other moneys they were illegally required to pay the respondent union in order to secure or retain employment with the company . . . during the period beginning six months before the filing and service upon the respondent union of the charge in this proceeding."

In refusing to go along with the Brown-Olds order, the court said:

"To say, as we have said, that there was discrimination tending 'to encourage union membership' is not to say that the union members on the job became members or retained their membership in the union in order to secure or retain employment with Mahon. In the absence of some proof that dues would not have been paid but for the requirement, the board's reimbursement order becomes punitive rather than compensatory. As a punitive measure the refund provisions of the order should not be enforced."

The District of Columbia court was less articulate but it reached the same conclusion in a case involving an illegal hiring agreement with Local 357 of the teamsters union.

Relying on the Third Circuit's rejection of the Brown-Olds rule, it said the reimbursement order "goes too far" when it directs a refund of dues and fees paid the union "by all casual employees." It limited the order to the one individual who was found to be a victim of discrimination.

Davis-Bacon Is Condemned By Employer Association

The Chamber of Commerce has called for repeal of the Davis-Bacon Act, which requires payment of federally determined minimum wages on federal construction projects.

The law has outlived its usefulness, the Chamber claimed, and now upsets local wage practices "by importation of higher wage rates from other areas."

Spokesman for the Chamber was Eugene Keeney, secretary of the association's Special Committee on the Walsh-Healey and Davis-Bacon Acts. He has condemned the law in a statement entitled "A 30-Year Headache."

Mr. Keeney argues that the law is no longer necessary to protect local wage standards from being undermined by the importation of cheap labor. He accuses the Labor Department of maladministration of the law in its determination of prevailing wages and says it is putting union wage rates in all government contracts, even in rural areas where there are no unions.

Although repeal of the law "must be" the long-run goal, he said, immediate attention should be given to judicial review of wage determinations and to curbing the Secretary of Labor's power to blacklist offending contractors.

The AFL-CIO building trades unions, on the other hand, are seeking modernization of the law. Growth of fringe benefits and of indirect federal financing make it necessary, they say.

Motor Selection and Application

Just Published. Describes motor selection in terms of load characteristics, service requirements, space limitations, safety, and duty cycle requirements. Organizes, condenses, and simplifies information necessary to determine the proper application of electrical motors for industrial service. Includes industrially acceptable standards of ASA, AIRE, and NEMA, and many useful charts and tables. **By C. C. Libby, Fairbanks, Morse and Co. 486 pp., 222 illus., $13.50**

Electrical and Electronic Drawing

Just Published. Covers the preparation of virtually every type of electric and electronic circuit drawing—pictorial drawings, connection drawings and diagrams, block diagrams, and schematic diagrams. Includes modern circuit diagrams such as the automation circuit, Explorer satellite circuit, etched circuit drawings, and drawings that include cellular-floor construction for electrical systems in large buildings. Uses latest symbols and terminology. **By C. J. Baer, Univ. of Kansas. 211 pp., 182 illus., $6.00**

Cathodic Protection

Just Published. Tells everything you need to know to reduce corrosion of underground and submerged structures by electrochemical means of cathodic protection. It thoroughly discusses protective coatings, anode materials, hot-line enamels, field surveys, design considerations, and more. Included are many useful examples of installations under a wide variety of conditions. **By L. M. Applegate, A.U.S. (retired). 230 pp., illus., $9.00**

Handbook of Heavy Construction

Just Published. Here is expert guidance in estimating requirements of a construction job, solving field problems, and operating and maintaining equipment. Enables you to handle construction jobs efficiently and quickly, by giving tested methods on every phase of construction—data on equipment costs and output—valuable checklists. A time- and work-saving help for contractors, designers, engineers, and others. **Edited by F. W. Stubbs, Jr., Purdue Univ. 1040 pp., over 600 illus., $18.50**

SEE ANY BOOK 10 DAYS FREE

McGRAW-HILL BOOK CO., INC., Dept. ENR-3-10
327 W. 41st St., N.Y.C. 36

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

☐ Libby—**Motor Selec. and Application,** $13.50
☐ Baer—**Elect. and Electron. Drawing,** $6.00
☐ Applegate—**Cathodic Protection,** $9.00
☐ Stubbs—**Hand. of H'vy Const.,** $18.50

(PRINT)

Name .....

Address .....

City ..... Zone.... State.....

Company .....

Position .....

For prices and terms outside U.S. write McGraw-Hill Int'l., N.Y.C. **ENR-3-10**

Picketing Bill Wins Approval

Subcommittee agrees construction unions should be able to publicize labor dispute with on-site employer

The campaign by AFL-CIO building trades unions to lift Taft-Hartley Act curbs on construction site picketing has cleared its first congressional hurdle—but the big ones are still to come.

After two weeks of hearings, a House labor subcommittee last week voted five to three in favor of a bill (see box), authored by Rep. Frank Thompson (D.-N.J.), to exempt construction unions from secondary boycott penalties when a strike against one contractor hits other contractors on the same project. The proposed amendment would change the Denver Building Trades case rule that common project contractors are independent, and neutral except for the contractor involved in the dispute.

The next step will be a vote by the full House Education and Labor Committee on the bill, and the signs indicate its approval at this point. However, the Thompson measure must still clear the House Rules Committee where its fate is questionable. If this happens, then it goes to the House floor for debate and final action.

The House subcommittee vote at least indicated the measure will go to the half-way mark. Rep. Clare Hoffman, a Michigan Republican, voted for the measure because, he said, "I believe in fighting these things out on the floor." Mr. Hoffman, normally, is a critic of labor-supported legislation. Four Democrats voted with Mr. Hoffman: Rep. Carl D. Perkins, Ky.; Roy W. Wier, Minn.; Elmer J. Holland, Pa., and Ludwig Teller, N. Y. Against the measure were Democrat Graham Barden, N. C. and Republicans Robert P. Griffin, Mich., and Carroll Kearns, Pa.

. . . What the bill says

The Thompson bill would amend the Taft-Hartley Act by providing that nothing in it "shall be construed to make unlawful where not otherwise unlawful any strike or refusal to perform services at the site of the construction, alteration, painting, or repair of a building, structure, or other work and directed at any of several employers who are in the construction industry and are jointly engaged as joint ventures or in the relationship of contractors and subcontractors in such construction, alteration, painting or repair at such site, and there is a labor dispute, not unlawful under this Act or in violation of an existing collective bargaining contract, relating to the wages, hours, or other working conditions of employees employed at such site by any such employers."

Industry Promotion Fund Set Up

The General Building Contractors Association of Philadelphia and the Metropolitan District Council of the United Brotherhood of Carpenters and Joiners, AFL-CIO, have signed a one-year labor contract that was negotiated and approved by the union a year in advance of the old pact's expiration.

The contract, effective May 1, grants a 10-cent hourly wage increase, gives the carpenters a health and welfare fund for the first time and sets up a new industry advancement fund.

It covers 7,500 carpenters engaged in commercial, industrial and institutional work in five counties.

Employers will contribute 15 cents an hour for the new funds. Ten cents will go to health and welfare and five cents to the advancement fund. The contract spells out the permissible areas of activity for the industry advancement fund.

Harry P. Taylor, executive secretary of the contractors association, says these include apprentice training, accident prevention, public relations, education and the purchase of bonds to insure contractor payments into the funds.

One of the results may be a switch from evening to daytime programs of related classroom instruction for apprentices, according to Mr. Taylor. This means contractors will be able to pay apprentices for the time spent in class— now 144 hours a year—making it easier, perhaps, to recruit apprentices.

Educational activities now being contemplated for the industry advancement fund include schools for superintendents, estimators and foremen and efforts to encourage boys in local schools to take courses that will prepare them for work in the construction industry.

Steel's Agency Shop Clause Hit

The National Right To Work Committee has accused labor and management in the steel industry of violating "the intent and purpose" of state right-to-work laws banning the union shop.

The committee's complaint is based on the fact that the new labor contracts for steel contain what is known as an "agency shop" clause. The clause requires nonunion steelworkers in right-to-work law states to pay the union a "service charge" equal to regular union dues.

The committee calls the clause "a back door approach" to a union shop. It says the clause, like a union shop, exacts from "unwilling employees" dues used for politics and other purposes far removed from collective bargaining.

Fred A. Hartley, Jr., co-author of the Taft-Hartley Act and first president of the National Right to Work Committee, contends the agency shop clause is illegal in all right-to-work-law states. He says Congress never intended to exempt it from state bans on closed and union shops.

The controversial clause in the steel contract provides:

"Each employee . . . who fails voluntarily to acquire or maintain membership in the union, shall be required as a condition of employment . . . to pay to the union each month a service charge as a contribution toward the administration of this agreement and the representation of such employees. The service charge for the first month shall be in an amount equal to the union's regular and usual initiation fee and monthly dues and any general and uniform assessment, and for each month thereafter in an amount equal to the regular and usual monthly dues and any general and uniform assessments."

The clause applies only to workers in states that ban the union shop. It does not apply in Alabama. In non-right-to-work law states, the usual union shop clause applies, requiring membership in the union after 30 days of employment.

Members of the National Right To Work Committee contend the clause is illegal in all the 19 right-to-work law states except Indiana. Only protection now left for steel workers, they say, is "rigid enforcement" of existing right-to-work laws and enactment of similar laws in other states.

The committee expects more unions to seek an agency shop clause.

Labor in Brief . . .

• **New officers**—The AFL-CIO Building and Construction Trades Department has named two new vice presidents: John J. Murphy, vice president of the bricklayers union, and Edward J. Leonard, president of the plasterers union. William J. McSorley, former first vice president, has been appointed coordinator of the department's Executive Council.

• **A costly steward**—Teamster President James Hoffa says the union's court-appointed monitors are costing it $1,000 a day in salaries, legal bills and other expenses. A maze of litigation is now pending to oust the monitors, on the one hand, and to oust Mr. Hoffa, on the other.

• **Anti-union charge**—Contractors installing turbines, generators and other electrical equipment at the Fremont Canyon power project in Wyoming have been charged with "coercing and intimidating" workers who sought union representation. Unfair labor practice charges are pending.

• **Labor law action**—More than 500 complaints of violations of the new Landrum-Griffin labor law are under investigation by the Labor Department's Bureau of Labor-Management Reports, according to Commissioner John L. Holcombe. Only a few, it is estimated, will reach the prosecution stage.

• **Fair Labor Standards Act**—The Kennedy-Morse-Roosevelt bill, calling for a $1.25 minimum wage and broader coverage, would bring overtime pay and wage improvements to 1,331,000 additional construction workers, says the AFL-CIO. The federation claims 10% of these workers get less than $1.25 an hour.

• **Prevailing wages**—The Kentucky Senate has passed and sent to the House a bill that would give a three-man board the power to set wage rates on all public projects, state and local, in Kentucky. The bill is backed by the state AFL-CIO and the governor.

OFFICIAL PROPOSALS

Bids: March 22, 1960

Elevated Tank and Connections

NOTICE TO BIDDERS
FAIRFAX COUNTY WATER AUTHORITY
ANNANDALE, VIRGINIA
PROJECT 8

Sealed proposals will be received by the Fairfax County Water Authority at the office of the Authority, 7310 Maple Street, Annandale, Virginia, or by mail addressed to the Authority, P. O. Box 91, Annandale, Virginia, until 3:00 P. M., Eastern Standard Time, March 22, 1960, at which time they will be read aloud, and contracts awarded as soon thereafter as practicable for the construction of an elevated storage tank and connections on and adjacent to the Fairfax County Hospital grounds in the vicinity of Annandale, Fairfax County, Virginia.

The work comprises two Divisions, as follows:

Division A—The construction of approximately 1,400 linear feet of 16-inch cast iron pipe water main and appurtenances. The pipe will be furnished by the Authority.

Division B—The construction of a 1 million gallon elevated storage tank, complete with 12-inch cast iron pipe connections, valve vault, fence and all appurtenances.

The Instructions to Bidders, Proposal, Agreement, form of Bid Bond, Performance Bond, Plans and Specifications for the work may be examined at the office of the Fairfax County Water Authority, 7310 Maple Street, Annandale, Virginia, and at the office of Greeley and Hansen, Engineers, 14 East Jackson Boulevard, Chicago 4, Illinois. Copies of the Plans and Contract Documents may be obtained upon the deposit of $25.00 for each set, to be refunded upon return of such set in good condition within 10 days after the opening of bids.

Each proposal must be accompanied by a bid bond or a certified check on a solvent bank or trust company, made payable to the Fairfax County Water Authority, in the amount of not less than five per cent of the total bid, as assurance that the bid is made in good faith.

Bidders must be registered as Contractors in the Commonwealth of Virginia, as provided by Chapter 7 of Title 54 of the Code of Virginia of 1950.

The Fairfax County Water Authority reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interests of the Authority after all bids have been examined and canvassed.

FAIRFAX COUNTY WATER AUTHORITY

By: James J. Corbalis, Jr.
Engineer-Director

February 24, 1960

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5289) will be received at Lewiston, California, until 2 p.m., Pacific Standard Time, April 19, 1960, for furnishing labor and materials for earthwork and structures, relocation of Trinity County Road, Nelson Creek Gap to Van Ness Creek, Trinity River Division, California, Central Valley Project. Location near Redding, California. Principal items are 126,000 cu. yds. excavation for roadway; 2,186 lin. ft. of furnishing and laying 18-inch diameter No. 16 gauge corrugated metal pipe; and other work. Completion time 225 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento 11, California; P. O. Box 247, Lewiston, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: March 17, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time, on the 17th day of March 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON District Engineer, 353 Broadway, Albany 1, New York						
Albany & Schenectady	FITS 60-3	City of Schenectady: Crosstown Connection, FAC 58-26P; Interstate Rte. Conn. 550, Schenectady Crosstown to Thruway, FISH 58-20; NYS Thruway-mohawk Sec. (Interchange 25 Connection) ST 58-2. Proj. U-323(20); I-890-5(15)	2.22 (1.44 Acc.)	Traffic Signs	$2,200 Plans $5	$40,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida (Rte. 8)	FARC 60-21	Utica-Poland, Pt. 2B, S.H. 5691A Utica-Poland, Pt. 3, S.H. 5597 Proj. S-482(1)	4.13	Asph. Conc. Ty. 1A=4.13 Mi. Widen Reinf. Conc. Slab Br. Span 20'	$35,000 Plans $5	591,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	FAC 60-7 FASH 60-2	Rochester City: Innerloop (Front St. to North St.); Rochester Outerloop, (Winton Rd. South-Highland Ave.) Proj. U-1089(13); U-1093(7)	2.74 (2.30 Acc.)	Asph. Conc.=0.79 Mi., Misc. Work=0.10 Mi.; Demol. & Grad.=1.85 Mi., 4 Hwy. Gr. Sep. & 1 Br. Comp. I-Beams, 7 Spans 371.0'; 1 Span 76.5', 1 Span 86.4', 1 Span 72.1', 2 Spans 136.0'	$225,000 Plans $10	4,132,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie (Rt. 5)	FARC 60-19	Williamsville Village, S.H. 5061 Main Street, Pt. 2, S.H. 87 Proj. F-933(6)	1.23	Asph. Conc.=1.18 Mi. Misc Work=0.05 Mi.	$35,000 Plans $5	629,000
DISTRICT No. 6. JAMES H. THOMAS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany (Rte. 19, 408)	FARC 60-18	Friendship-Belmont, S.H. 5341 Belvidere-Transit Bridge-Angelica, S.H. 1260 Proj. F-FG-332(8)	4.63	Asph. Conc.=4.63 Mi. Br. 1 Twin Box Reinf. Conc. 12'x6.2' Br. Over Erie RR & Creek Comp. I-Beam 4 Spans 280.8'	$80,000 Plans $5	1,442,000
DISTRICT No. 7, ROBERT W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton (Int. Rt. 87)	FITS 60-2	Int. Rte. 502, Sec. 7B-1 (Salmon River to Rugar St.) FISH 59-2; Sec. 7B-2, (Rugar St. to Cumberland Head Rd.), FISH 58-23, FIC 58-1; Plattsburgh-Keeseville, Pt. 1, S.H. 56 Proj. I-87-1(17)	4.91 (1.89 Acc.)	Traffic Signs	$1,200 Plans $5	21,000
DISTRICT No. 8, KURT G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Dutchess (Rt. 199, 82)	FARC 60-20	Amenia-Pine Plains, Pt. 2, S.H. 5628 Lafayette-Pine Plains-Winchell, Pt. 1, S.H. 1313 Proj. F-594(4), F-468(12)	1.08	Asphalt Concrete	$12,000 Plans $5	219,000
Dutchess (Rt. 44)	R.C. 60-24	Washington Hollow-Millbrook S.H. 609 Millbrook Village, S.H. 1114	1.58	Asphalt Concrete	$10,000 Plans $5	186,000
Rockland & Westchester	T.C. 60-1	Broadway-Hastings-Dobbs Ferry-Mt. Pleasant-Tarrytown-N. Tarrytown, S.H. 9206; White Plains-Eastview Rd., S.H. 5571; Spring Valley-Knapps Corners, S.H. 689; Knapps Corners-Nyack, S.H. 5178		Traffic Signals	$2,500 Plans $5	45,000
DISTRICT No. 9, JOSEPH C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Delaware (Rte. 206)	FARC 60-23	Walton-Downsville, Pt. 1, S.H. 8515 Walton-Downsville, Pt. 2, S.H. 48-18 Proj. S-44(6)	6.68	Asphalt Concrete	$44,000 Plans $5	804,000
Delaware	BWS 60-1	New York City: Board of Water Supply, Road No. 1 (Cannonsville Reservoir) (Stilesville Bridge)	0.16	Prestress. Conc. Beam Br. 6 Spans, 470.1 Ft.=0.09 Mi. Misc. Work=0.07 Mi.	$24,000 Plans $5	436,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx & New York	FICBE 60-2	Interstate Rte. Conn. 511 (Cont. 1A); Cross Bronx Expressway (Alexander Hamilton Br. Substructure) Proj. I-95-1(38)	0.31	Bridge Substructure=0.29 Mi. Misc. Work=0.02 Mi.	$180,000 Plans $5	3,340,000
Kings (Int. Rt. 278)	FIGE 60-2	Int. Rte. Conn. 512 Gowanus Expressway (20th to 36th Streets) Proj. I-278-1(47)	0.82 (0.82 Acc.)	Reinf. Conc. Slab Roadway (on Viaduct)=0.80 Mi., Misc. Work=0.02 Mi., Sheet Asph. Pavt. (Streets)=0.82 Mi., Alter & Strengthen Elevated Steel Struct. 80 Spans, 4,216'	$700,000 Plans $5	12,347,000
Nassau	FANE 60-1	Nassau Expressway (Cont. 1) Bayview Ave. to Broadway Proj. U-1098(5)	0.45	Demol. of Buildings	$1,000 Plans $5	18,000
Nassau	FAHHE 60-2	Horace Harding Expressway Ext. New York City-Nassau Co. Line to Guinea Woods Road Proj. U-862(26)	—	Roadside Development Access Ramps Delineators & Misc. Work	$15,000 Plans $5	262,000
Nassau & Suffolk	FALIE 60-1	Long Island Expressway (Nassau-Suffolk Co. Line to Pinelawn Rd. Proj. U-862(25)	2.63 (4.61 Acc.)	9" Cem. Conc. 2 @ 36=2.36 Mi., Misc. Work=0.27 Mi. Acc. 2.45 Mi. Conc.; 2.16 Mi. Asph Conc.; 4 Hwy. Gr. Seps. Comp. St. Em.; 4 Sps. 152.0'; 4 Sps. 236.3'; 4 Sps. 266.2'; 4 Sps. 258.0'	$240,000 Plans $5	4,110,000
Nassau & Suffolk	NSP 60-1 WSP 60-1	Northern State Parkway (N.Y. City Line-Sunken Meadow Spur); Wantagh State Parkway (Northern St. Parkway-Southern St. Parkway)	29.69	Fencing at Various Locations	$15,000 Plans $5	274,000
Suffolk (Rte. 27)	FARC 60-26	Sunrise Highway Extension S.H. No. FASH 58-5; FASH 58-6 Proj. U-947(20); F-947(20)	6.80	Roadside Development	$12,000 Plans $5	209,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal. Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: March 24, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 24th day of March 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 333 Broadway, Albany 1, New York						
Albany (Rtes. 32 & 144)	R.C. 60-33	Albany-Bethlehem, S.H. 5499 and So. Pearl St. extension (City of Albany)	0.02	Clean. & Paint. Truss Bridge No. 1	$175 Plans $5	$3,200
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Niagara (Int. Trg. Rte. 190)	FINIE 60-1	Interstate Route 506, Niagara Expressway, Cont. 1 (Packard Road to Isherwood Dr.) Proj. I-190-1(27)	2.08	Grad. Drain. & Misc. Work	$31,000 Plans $5	563,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Rockland (Rte. 303)	FARC 60-11	New Jersey State Line–Congers, Pt. 1, S.H. 1898	1.19	9" Cem. Conc. Pavt. 2 @ 24' Wide = 1.14 Mi.	$70,000	1,288,000
		New Jersey State Line–Congers, Pt. 2, S.H. 8448 Project U-528(8)	(0.37 Acc.)	Misc. Work = 0.05 Mi.; (Access = 0.22 Mi. Asph. Conc. Pavt. and 0.15 Mi. Cem. Conc. Pavt.)	Plans $5	
Westchester	TSP 60-1	Taconic State Parkway: Kitchawan Road Interchange, Northeast Ramp	0.39	8" Cem. Conc. Pavt. = 0.33 Mi. Misc. Work = 0.06 Mi.	$10,000 Plans $5	171,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 17C)	FARC 60-17	Lesterahire, S.H. 125; Hooper–Johnson City, S.H. 5699 Proj. U-401(9); U-1143(2)	1.94 (1.96 Acc.)	Asph. Conc. Pavt. = 2.33 Mi. Grad. & Drain. = 1.57 Mi.	$160,000 Plans $5	2,958,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN

SUPT. OF PUBLIC WORKS

Bids: March 23, 1960.

Sewage Treatment Plant and Sanitary Sewers

NOTICE TO CONTRACTORS
VILLAGE OF UNION SPRINGS,
CAYUGA COUNTY, NEW YORK

Sealed proposals for furnishing all labor, equipment and material for the construction and installation of a Sewage Treatment Plant and Sanitary Sewers and appurtenances for the Village of Union Springs, New York, will be received by the Village Board of Trustees at the Village Hall, Union Springs, New York until 2:00 P.M. Eastern Standard Time on Wednesday, March 23, 1960, at which time they will be publicly opened and read aloud.

The work is divided into the following contracts:

1. Sewage Treatment Plant and Effluent Line.
2. Sanitary Sewers.

These contracts may be awarded separately or together as the Village Board may deem to be in the best interests of the Village.

The Contract Documents including the Information for Bidders, Form of Bid, Plans and Specifications, etc., may be examined at the office of the Village Clerk, Union Springs, New York, and copies thereof may be obtained from William T. Field, Consulting Engineer, Watertown, New York, upon a deposit of Twenty-Five ($25.00) Dollars for each set, which sum will be returned to all bidders upon their return in good condition within thirty (30) days after the opening of the bids.

The Village Board reserves the right to waive any informalities in or to reject any or all bids or to accept any bids that it deems to be in the best interest of the village.

Each bidder must deposit with each bid security in an amount of not less than five (5%) per centum of the bid the form and subject to the conditions provided for in the Information for Bidders.

VILLAGE OF UNION SPRINGS, N. Y.
Earl E. Fox, Mayor

Dated: February 23, 1960

WILLIAM T. FIELD
Consulting Engineer
Watertown, N. Y.

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

Bids: March 22, 1960

Penderwood Standpipe 1.0 or 2.0 M.G. Capacity

NOTICE TO BIDDERS
FAIRFAX COUNTY WATER AUTHORITY
ANNANDALE, VIRGINIA
PROJECT 16

Sealed proposals will be received by the Fairfax County Water Authority at the office of the Authority, 7310 Maple Street, Annandale, Virginia, or by mail addressed to the Authority, P. O. Box 91, Annandale, Virginia, until 3:00 P. M., EASTERN STANDARD TIME, MARCH 22, 1960, at which time they will be read aloud, and contracts awarded as soon thereafter as practicable for the construction of either a 1.0 MG or 2.0 MG steel standpipe and pipe connections to be located at Penderwood, Fairfax County, Virginia.

The work comprises the furnishing of all materials and the construction of a covered steel water storage tank at ground level, complete with 16" cast iron pipe connection, altitude valve vault, valves, fittings, fence and appurtenances.

The Instructions to Bidders, Proposal, Agreement, form of Bid Bond, Performance Bond, Plans and Specifications for the work may be examined at the office of the Fairfax County Water Authority, 7310 Maple Street, Annandale, Virginia, and at the office of Greeley and Hansen, Engineers, 14 East Jackson Boulevard, Chicago 4, Illinois. Copies of the Plans and Contract Documents may be obtained upon the deposit of $25.00 for each set, to be refunded upon return of such set in good condition within 10 days after the opening of bids.

Each proposal must be accompanied by a bid bond or a certified check on a solvent bank or trust company, made payable to the Fairfax County Water Authority, in the amount of not less than five per cent of the total bid, as assurance that the bid is made in good faith.

Bidders must be registered as Contractors in the Commonwealth of Virginia, as provided by Chapter 7 of Title 54 of the Code of Virginia of 1950.

The Fairfax County Water Authority reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interests of the Authority after all bids have been examined and canvassed.

FAIRFAX COUNTY WATER AUTHORITY
By: James J. Corbalis, Jr.
Engineer-Director

February 24, 1960

Bids: March 25, 1960

Rip-Rap for Pier Protection Townsends Inlet Bridge Avalon, New Jersey

CAPE MAY COUNTY BRIDGE COMMISSION
NEW JERSEY
ADVERTISEMENT FOR PROPOSALS
March 10, 1960

Sealed bids for furnishing and placing rip-rap protection at Pier 1 of the Townsends Inlet Bridge near Avalon, New Jersey, will be received by the Cape May County Bridge Commission in its offices at Cape May Court House, New Jersey, until 2:00 P.M. Eastern Standard Time on March 25, 1960, and then at said place, publicly opened and read aloud.

The Information for Bidders, Proposal, Contract, Contract Bond, Plans and Specifications may be examined at the office of the Commission, First National Bank Building, Cape May Court House, New Jersey, and at the office of Howard, Needles, Tammen & Bergendoff, Consulting Engineers, 99 Church Street, New York 7, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Commission or to the Consulting Engineers. The payment will not be refunded and contract documents are not required to be returned.

The Contract will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The Commission reserves the right to waive any informalities in and to reject any or all bids.

Cape May County Bridge Commission
Robert J. Campbell, Chairman

U. S. Government

Department of Commerce, Bureau of Public Roads, March 4, 1960. SEALED BIDS will be received at the office of C. H. Buchanan, Division Engineer, Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., APRIL 7, 1960, for Project 2B1, Part A, Natchez Trace Parkway, Colbert and Lauderdale Counties, Alabama. Construction of 37 Piers and 2 Abutments for Bridge over Tennessee River. The approximate quantities of the more important items are: 8,800 cu. yd. Excavation for Structures, 20,100 cu. yd. Concrete, and 771,000 lb. Reinforcement Steel. Minimum wage rates have been fixed as required by law. Plans, specifications and bid forms are available upon request at the address given above or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. F. W. Cron, Regional Engineer.

OFFICIAL PROPOSALS

Bids: March 24, 1960

Beach Protection

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Public Building Law and Highway Law, sealed proposals will be received, until 10:30 A.M., E.S.T., March 24, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for:

Contract B.P. 60-76
Beach Protection
(Artificial Beach Nourishment)
at Asharoken Beach, Town of Huntington
Suffolk County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor The Governor Alfred E. Smith State Office Bldg., Albany, New York.

(b) Mr. William Mende, Principal Bldg. Construction Engineer, Department of Public Works, 270 Broadway, New York City, New York.

(c) In addition to the above mentioned offices, plans, maps and specifications for Contract B.P. 60-76 may be examined and obtained at the office of Mr. Milton E. Goul, 325 West Main St., Babylon, L. I., New York.

The deposit for Plans and Proposal Forms for Contract B.P. 60-76 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.
The Engineer's Estimate of Cost for Contract B.P. 60-76 is $113,000.00.
Proposals for Contract B.P. 60-76 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the State of New York, Commissioner of Taxation and Finance for the sum of $6,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Public Building Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.
The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: March 29, 1960

Blast Fences

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
HANGAR NO. 17
CONTRACT NYA-970.009

Sealed proposals for the construction of blast fences at Hangar No. 17 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 29, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, March 10, 1960

Bids: March 31, 1960

Nashville Avenue Wharf and Approach Trestles

Board of Commissioners of the Port of New Orleans will open bids at No. 2 Canal Street on Thursday, March 31, 1960 at 2 o'clock p.m. for the Nashville Avenue Wharf and approach trestles, approximately 60,000 sq. yds. in area of concrete deck on steel bearing piles from Board's stock, grading, foundations for future shed, etc.
Plans, specifications and bid forms may be secured after March 14, 1960 at Room 214 upon deposit of $25.00 by check payable to Board, refundable up to the extent of three sets taken out by anyone submitting a bid directly to the Board. Other sets are available at $25.00 per set, not refundable.
Preliminary plans are available for inspection.
Prior to opening of bids, bidder shall submit evidence that he holds license of proper classification and in full force and effect under La. R.S. 37:2151.
Deposit of 5% of bid, by certified or cashier's check, is required with bid.
Acceptable surety bond for amount of bid is required with notarial contract.
Board may accept or reject any bids, waive informalities and award contract in its best interest.

Bids: March 17, 1960.

Notice: Re. Prequalification Forms For Contractors

BOARD OF EDUCATION—BUREAU OF CONSTRUCTION
APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT

The Superintendent of School Buildings, Bureau of Construction, 4th Floor Room 407, 42-15 Crescent Street, Long Island City 1, N. Y., will receive application for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:
General construction, plumbing and drainage (including heavy kitchen equipment), heating and ventilating, electrical work and lighting fixtures.

BROOKLYN
P.S. 196, Bushwick Ave., Scholes & Meserole Streets. Modernization and Conversion.

QUEENS
P.S. 183, Beach Channel Dr., Beach 80th & 81st Streets. New Building.

MANHATTAN
P.S. 84, W. 91st & W. 92nd Streets & Central Park West. New Building.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of Design, Construction and Physical Plant, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y.
Bids when advertised, will be received from prequalified bidders only.
Time for submitting prequalification applications by contractors will expire on Thursday, March 17, 1960.

JOSEPH R. WEISS
Superintendent of Design, Construction and Physical Plant.
Dated: February 26, 1960.
Starting: Monday, March 7, 1960.
Five (5) days.

Bids: March 17, 1960.

Soil Explorations and Foundation Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time on March 17, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON LOWER MANHATTAN EXPRESSWAY, WESTSIDE EXPRESS HIGHWAY TO WILLIAMSBURG BRIDGE APPROACH, F.A.I. ROUTE 513-1-1, NEW PROJECT NUMBER 1-78-1(5)1, ITEM 27B, NEW YORK COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-154.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.

(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.

(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York, New York.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.
The Engineer's Estimate of cost for this work is $47,700.00.
Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".
The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS

of

Engineering News-Record

for Opportunities to bid.
They might not see your announcements if printed elsewhere.

You undoubtedly want their bids on your contracts.
Make sure of them on your next contract.

The cost is only $2.40 a line per issue.

OFFICIAL PROPOSALS

Bids: March 23, 1960

Transmission Mains

NOTICE TO BIDDERS

FAIRFAX COUNTY WATER AUTHORITY
ANNANDALE, VIRGINIA

PROJECT 14

APPROXIMATELY 26.5 MILES OF 12" to 30" CAST IRON, STEEL OR PRE-STRESSED CONCRETE PRESSURE PIPE WATER MAINS

Sealed proposals will be received by the Fairfax County Water Authority at the office of the Authority, 7310 Maple street, Annandale, Virginia, or by mail addressed to the Authority, P. O. Box 91, Annandale, Virginia, until 2:00 P. M., EASTERN STANDARD TIME, MARCH 23, 1960, at which time they will be read aloud, and contracts awarded as soon thereafter as practicable for the construction of water transmission mains at various locations in Fairfax County, Virginia.

The work comprises the furnishing of all materials and construction of the water mains and appurtenant work and is divided into four divisions, as follows:

Division A—Chain Bridge Road Water Main, comprising approximately 15,920 feet of 30" steel or concrete pipe water main.

Division B—Dunn Loring Road Water Main, comprising approximately 40,000 feet of 24" cast iron, steel or concrete pipe water main or 30" steel or concrete pipe water main.

Division C—Arlington Boulevard—Waples Mill Road Water Main, comprising approximately 1330 feet of 12" cast iron pipe water main and 34,800 feet of 18", 20" or 24" cast iron, steel or concrete pipe water main.

Division D—Floris Road Water Main, comprising approximately 23,650 feet of 14" or 16" cast iron pipe water main or 18" cast iron, steel or concrete pipe water main; 19,000 feet of 14" or 16" cast iron pipe water main and 4,650 feet of 12" cast iron pipe water main.

Bidders may submit proposals on any complete Division or any combination of complete Divisions. Bidders are required to submit proposals on all alternate sizes and all alternate materials.

The Instruction to Bidders, Proposal, Agreement, form of Bid Bond, Performance Bond, Plans and Specifications for the work may be examined at the office of the Fairfax County Water Authority, 7310 Maple Street, Annandale, Virginia, and at the office of Greeley and Hansen, Engineers, 14 East Jackson Boulevard, Chicago 4, Illinois. Copies of the Plans and Contract Documents may be obtained upon the deposit of $50.00 for each set, to be refunded upon return of such set in good condition within 10 days after the opening of bids.

Each proposal must be accompanied by a bid bond or a certified check on a solvent bank or trust company, made payable to the Fairfax County Water Authority, in the amount of $30,000.00 for *each* Division for which a proposal is submitted, as assurance that the bid is made in good faith.

Bidders must be registered as Contractors in the Commonwealth of Virginia, as provided by Chapter 7 of Title 54 of the Code of Virginia of 1950.

The Fairfax County Water Authority reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interests of the Authority after all bids have been examined and canvassed.

FAIRFAX COUNTY WATER AUTHORITY

By: James J. Corbalis, Jr.
Engineer-Director

February 24, 1960

District of Columbia—Building Construction—Dept. of Buildings & Grounds, February 18, 1960. CONSTRUCTION OF TYPE "X" LIVING FACILITIES AT THE YOUTH CORRECTIONAL CENTER, NEAR LORTON, VIRGINIA. (INVITATION NO. C-60127-B). Bid forms, plans and specifications are now available from Supervisor, Bid and Contract Division, Procurement Office, D. C., Rm. 404, 499 Pennsylvania Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM, EST, March 17, 1960, in Room 424, 499 Penn. Ave., N.W.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

MARCH 24TH ISSUE CLOSES MARCH 14TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

Superintendent Equipment Maintenance Great Lakes Area

WANTED—superintendent for year 'round slag and field operation with 200 unit heavy dump fleet and 50 crawler units. Age to 40, replies held in strict confidence.

Send work history and salary requirements to

P-3851, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *POSITIONS VACANT*

Sales Engineer: To represent expanding pre-stressed concrete plant in Southeastern Wisconsin area. Structural design background in building field considered helpful. Send complete resume and salary requirements to P-3492, Engineering News-Record.

Have opening for recent Civil Engineer Graduate with military obligations completed who desires to learn the construction business. Ambitious, aggressive, dependable, use no intoxicants, willing to start in the field on industrial building and heavy construction, and willing to move. Must be single. We operate throughout Kansas and adjacent states; offer excellent opportunity for advancement. Martin K. Eby Construction Company, Inc. P. O. Box 1679, Wichita, Kansas.

Superintendent Wanted. Must have knowledge and experience in operation of pulverizing equipment. Four year job Arizona. In first letter state experience, qualifications, expected earnings and references. P-3785, Engineering News-Record.

Wanted: Deputy Director for Department of Public Improvement, Division of Waters and Sewers. Must have training and experience in the field of Sanitary Engineering and experience in Municipal Administration, and must be thoroughly familiar with engineering problems in the field of public works improvement. Apply Savannah Civil Service System, 8 East Bay Street, Savannah, Georgia.

Shaft Sinking Foreman—with experience in concrete lining and grouting. Take charge sinking two (2) shafts. Location—Far East. Status—Single. Contract—One (1) year. Salary—Open. Must be available June 1st. P-3832, Engineering News-Record.

Diamond Drilling Foreman—must have had responsible charge of large drilling project, preferably with foreign experience. Location—Far East. Status—Single. Contract—One (1) year. Salary—Open. Must be available June 1st. P-3841, Engineering News-Record.

When Answering
BOX NUMBERS . . .

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

• *POSITIONS VACANT*

Draftsman—experienced structural steel detailer and checker. Permanent position with established consulting firm. Fringe benefits. Submit resume of experience, references, and salary expected. Samborn, Stekette and Associates, 1214 Cherry Street, Toledo 4, Ohio, or 4913 Van Epps Road, Cleveland, Ohio.

Opening for Engineering graduate to act as Project Manager, Field Supervisor, Estimator and Man Friday for growing construction company, New York area and East. Write P. O. Box 387, Scarsdale, N. Y.

Sanitary Engineer—Challenging position with top notch national organization. Duties include: writing for publications, public speaking, spot inspections of construction projects, attendance at national conventions, and providing technical help for other engineers in our organization. Age 30-40, M.S. degree helpful, salary open, mid-west location. Excellent opportunity for the right man. P-3807, Engineering News-Record.

Sales Engineer—Civil, Highway product, major corporation, locate one of several points East Coast. Experience in highway construction or with Highway Department desirable. In applying state full qualifications and experience. P-3875, Engineering News-Record.

Prestressed Concrete Sales Engineer: To represent established expanding prestressed concrete plant in Denver, Colorado. Structural design background helpful. Desire top man as first assistant to managing director and capable of full charge. Salary open, profit sharing plan, vacation. Send complete resume. Strictly confidential. Craftsmen Construction Company, 1337 E. 18th Ave., Denver, Colorado.

Soil Drilling Analyst. Engineering Firm in Midwest Supervise Field Investigation Laboratory. P-3873, Engineering News-Record.

• *EMPLOYMENT SERVICE*

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 49 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

• *POSITIONS WANTED*

Construction Executive, age 36. Prefer equipment maintenance division of heavy construction firm. Experienced in labor relations, cost control, purchasing of machinery and parts inventory, rail and truck transportation, repair shop management and prevention maintenance on all types of construction equipment. PW-3692, Engineering News-Record.

Architect, American, in Europe, licensed N. Y., N. J. 25 years experience, six years in Europe as Chief Architect, seeks new position. A. Hofmann, 5 Vieux College, Geneva, Switz.

Project Superintendent or General Superintendent capable of expediting complete project with twenty-two (22) years experience with; Superstructure, pre-cast, concrete, concrete, structural steel and all types of cantilever structures. I coordinate all subcontractors including mechanical and expect top pay and benefits. U.S. or O.S. Answer to, PW-3752, Engineering News-Record.

(Continued on page 79)

RESIDENT ENGINEERS

SITE CONSTRUCTION

Federal Electric Corporation offers several exceptional short-term positions of approximately seven months duration (May-November). These resident engineers will be responsible for construction aspects of major repair, major modification and new construction at FEC's DEW Line sites in Canada and Alaska.

SALARY ON DEW LINE, $1350 per month, plus room & board.

Applicants must be U. S., Canadian or British citizens.

Qualifications: 10 years engineering experience (at least 5 in field supervision of heavy and/or building construction); engineering degree or equivalent experience; broad knowledge of his specific field of engineering; basic knowledge of associated branches.

Write Mr. S. R. Brand, stating education and experience and date available.

FEDERAL ELECTRIC CORPORATION
Service Division of International Telephone and Telegraph Corporation
Paramus Industrial Park, Paramus, New Jersey

LABORATORY ENGINEER

FOREIGN ASSIGNMENT on Multi-Purpose Dam Project in Thailand

24-Month Contract

College graduate. Should have minimum five years experience in responsible supervisory positions in concrete laboratories including two years in charge of concrete laboratory on dam work. Experience desirable in concrete design, use of water reducing-retarder, air entraining and cooling agents. Must pass physical examination and security investigation.

- EXCELLENT SALARY
- OVERSEAS BONUS
- COMPLETION INCENTIVE
- EXTRA VACATION ALLOWANCE
- MEDICAL CARE & INSURANCE

Send complete resume, include all past employees' addresses and accurate salary information to

SVERDRUP & PARCEL ENGINEERING CO.
915 Olive St., St. Louis 1, Missouri

ENGINEERS

HIGHWAY SANITARY

Permanent positions open for experienced engineers in highway or sanitary engineering design. Reply fully, stating present salary, income requirements, experience, age, education and registration. Local interview will be arranged.

MISSMAN, STANLEY, FARMER & ASSOCIATES
CIVIL ENGINEERS
P. O. Box 736 Rock Island, Illinois

WANTED

ENGINEERING ASSOCIATES

SANITATION WATER SUPPLY (foreign & domestic)
PETROLEUM (foreign)
GEOLOGICAL & MINING (foreign)
CHEMICAL & PETRO-CHEMICAL (foreign and domestic)
WATER RESOURCES (foreign)
HYDRO-ELECTRIC (domestic & foreign)
CONSTRUCTION (domestic & foreign)

President and Vice-President levels. Complete charge of your own division.
Drawing account against substantial share of Division profits before tax PLUS income from own secured investment.
Minimum Investment $25,000.00
GLOBAL Activity—TOP Recognition

Send complete resume including photo to:

P. O. Box 968,
Station "B", Montreal, Quebec

ENGINEERS AND MATERIALS INSPECTORS

WANTED

TVA has openings on a large hydro- and steam-electric program for experienced civil, structural, electrical, and mechanical engineers in its Division of Design located in Knoxville, Tennessee, and for materials engineers and inspectors of materials located in various district offices, principally in the north and east.

These positions are at the following grades and rates of pay:

Civil, Mechanical, Electrical, and Materials Engineers, grades SD-2 and -3 $6200-$7150.

Inspectors of Materials, grades SE-5 and -6 $5825-$6623.

The engineering jobs require a college degree in engineering or its equivalent with from one to three years of experience in design and specification work, or in inspection and testing work for materials engineers. The inspector of materials jobs require some college training in engineering or equivalent training and experience in making engineering inspection and tests of mechanical, structural, and electrical equipment and materials.

All jobs carry automatic within-grade increases for satisfactory service, liberal vacation leave, sick leave, and retirement, hospitalization, and insurance benefits.

Write to:

TENNESSEE VALLEY AUTHORITY
Division of Personnel,
Knoxville, Tennessee

HEATING and VENTILATING ENGINEER

Mechanical Engineer with several years experience in consulting engineering or architectural office, working with heating or air-conditioning design. Position open in product design and development section of manufacturer of air distribution systems for multi-story buildings. Work consists of creative design and experimental models, field engineering trips and some sales contact during introductory period. Liberal salary and fringe benefits with stable national firm. Please forward resume of experience, education and salary requirements.

Harry C. Bott, Personnel Department
GRANITE CITY STEEL COMPANY
Granite City, Illinois

SALES ENGINEERS

A major steel company has need for sales engineers to promote and sell fabricated products in Middle Atlantic States. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive salary with company car, expenses and bonus plan.

SW—2763 ENGINEERING NEWS-RECORD
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

WANTED

Experienced dredge superintendent

Must be capable of the operation and maintenance of 18" dredge working in coastal waters Southeastern United States. A thorough knowledge of cost and estimating is essential. Give references, salary desired first letter.

P-3864 Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• POSITIONS WANTED

Construction Manager, graduate civil engineer, age 53, qualified for supervision all phases of heavy and industrial construction, last three years Federal projects of million dollar class, location preference southeast, available 60 days resume on request. PW-3745, Engineering News-Record.

Project Manager, B.S.C.E., 16 yrs. exp., hvy. Const., Hwys., flood control, earthwork, bldgs., Govt. contracts, field & office. E. Eiswirth, P. O. Box 48 Clayton 5, Mo.

Executive-Engineer. Management and Engineering experience with top consulting engineering firms. Complete charge of Production Planning and Control, Budgeting, Cost Control and Cost Accounting of private and government contracts. Bachelor and Master Degrees. Registered New York State. Desires position with real challenge. PW-3799, Engineering News-Record.

Construction Sup't., or Projects Mgr. Age 36. 14 years exp., bridge const. From drafting table to general sup't., to ownership of $350,000./year gross business. Presently selling out. Available immediately. PW-3817, Engineering News-Record.

Architects Resident Representative or Building Inspector available. Fair Spanish, French. Write Airmail to: "Engineer" Box 42, Rio Piedras, Puerto Rico.

Reg. Eng., Surveyor, 31, Supervise, Estimate public works. Can design, manage. 10 years varied exp. Prefer mild climate. Answer all inquiries. PW-3805, Engineering News-Record.

Supervising Civil Engineer (Design & Construction). B.S. and M.S. in C.E., M. ASCE and NSPE. P.E. N.Y., N. J., Del., Penn. 20 years responsible experience chemical and industrial plants. Highways and heavy construction. PW-3803, Engineering News-Record.

Mining Engineer, Married, 30, Registered P.E. 18 months construction surveying, drafting. Two years pipeline construction, estimating. Four years sales engineering. Desires engineering position. PW-3824, Engineering News-Record.

Paving and concrete superintendent, age 35 —10 years varied experience with Midwest firm—will relocate East or West or Abroad. PW-3826, Engineering News-Record.

Project Manager or General Superintendent, field supervision and general management. Thoroughly experienced industrial, commercial and institutional projects in U. S. and O. S. Now employed available 90 days. PW-3662, Engineering News-Record.

Project Mgr. or General Superintendent all phases general construction. Not afraid to travel, but would prefer to work out of New England. Sal. Min. $11,000.00 plus bonus & stock options. PW-3828, Engineering News-Record.

Chief Estimator, building and heavy construction. Experienced project manager, buyer, expeditor, capable of handling all phases from estimate to closing. PW-3810, Engineering News-Record.

Graduate Engineer-Attorney, 33, married, construction background, knowledge Govt. contracts, seeks position in construction management, will consider anywhere in U.S. PW-3801, Engineering News-Record.

Construction Superintendent. Experienced Hospitals, schools, banks, industrial, commercial buildings and high rise public housing. Quantity take-off, from bidding to final completion. PW-3868, Engineering News-Record.

Grade Supt. Highways. Flood Control, Air Base. Midwest-Eastern or Foreign location O.K. Age 45. P.O. Box 123, Campbell, California.

Elect. Const. Supt. or Ass't. Supt. Overseas. 13 yrs. exp. heavy industrial const. Min. Sal. $12,000 per yr. Contact J. M. McBride, 106 E. Cooke, Glenolden, Pa. LUdlow 6-7131.

Construction Man; Age 35—15 years experience. Supervisory, Heavy and Highway. Resume on request. PW-3867, Engineering News-Record.

Supt. of Blasting heavy construction work. References. PW-3882, Engineering News-Record.

U. S. Navy Civil Engineer Corps Officer, Age 26, BSCE. Recently completed 35 contracts totalling $13 Million as principal assistant resident engineer. Desires opportunity with small bldg. contractor in office and field. Available 1 May 60, West of Miss. River. PW-3848, Engineering News-Record.

Supt. of Shaft tunnel general rock work. PW-3886, Engineering News-Record.

• POSITIONS WANTED

Project Engineer-MCE, P.E., 12 years experience instructures, highways, and foundations, Resume on request. PW-3905, Engineering News-Record.

Estimator-Structural Engineer: P.E. 10 yrs. experience all types of buildings desire estimating postion with progressive const. co.—resume on request—avail. 30 days write PW-3847, Engineering News-Record.

Mgr. & Exec.—Comp. mature Const. man. 20 yrs. exp. organize & operate. Proven moneymaker on industrial and mech. Ready Mar. 25. Go anywhere. PW-3887, Engineering News-Record.

General foreman Blasting. References. PW-3889, Engineering News-Record.

Proj. Engr.—Mngr. 15 yrs. Indust. and Com. Contrs. Stl., Alum., Glass, and Food Mills, Assemb., Mnfr., Wat. and Sew. Plnts. Pref. Mid West and South. Avail. immed. PW-3891, Engineering News-Record.

Sales Manager—chief estimator—struct. stl. —38—grad. engr.; 15 yrs. exp. in sales, contract negotiations, pncing, cost analysis of bridges, bldgs., power plants; desires executive position with hard hitting, progressive fabricator. PW-3893, Engineering News-Record.

Civil Engineer, 28, Registered PE (NY). BS, MS plus. Several years supervisory and design experience soils, foundations, structures, materials. Seek opportunity for professional advancement with consultant, architect-engineer, manufacturer or association. Prefer East. PW-3894, Engineering News-Record.

Geologist—10 years field supervision in soils and dewatering seeking permanent location leading to executive position. PW-3880, Engineering News-Record.

• POSITIONS WANTED

Purchasing Agent—Multiple project experience in procurement of all components, construction equipment and sub-contracts necessary for the construction of oil refineries, pipe lines, compressor stations, gasoline plants, chemical plants, power plants, power transmission lines, ordnance depots and related projects. As an alternate I will furnish performance and completion bonds and sub-contract your purchasing labor at a fixed rate. Either way you will receive top professional performance. PW-3901, Engineering News-Record.

Quarry Superintendent. References. Will travel. PW-3896, Engineering News-Record.

Administrative or Field Office manager available. Extensive heavy construction experience. Payroll, purchasing, cost control, etc. Will relocate. PW-3877, Engineering News-Record.

Mech. Engr. B.S. 32, Regist., 7 yrs. exp. Refinery, Nat'l Gas & Chem. Ind. All phases of Design & Const. Speaks-writes Arabic. Naturalized Citizen. Desire position in Mid-East or Europe. PW-3906, Engineering News-Record.

Project Manager 42 yrs. old, 18 yrs. experience construction, operation, procurement and estimating of chemical plants. Fluent Spanish and Portuguese. PW-3903, Engineering News-Record.

Attorney-Engineer B.S.C.E. L.L.B. Age 30. Recent Law Graduate. 6 years design, specification and report writing. P.O. Box 7155, Tulsa, Oklahoma.

• SELLING OPPORTUNITY WANTED

Sales Engineering Representative available for Connecticut. S.E.M. Associates, 6 West Putnam Ave., Greenwich, Conn.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vest. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• CONTRACT WORK WANTED

Structural, Sanitary, Civil—Design and Drawing. Licensed Professional Engineers. CWW-3888, Engineering News-Record.

• BUSINESS OPPORTUNITIES

Opportunity to join and/or invest in midwestern engineering-contracting firm. Growth exceeds capital. BO-3804, Eng. News-Record.

Exclusive Franchise Offered To Professional Engineer. Proven money-making home inspection consulting service has received tremendous national publicity. New York Engineering firm founder with offices in Long Island, New Jersey, Chicago and Detroit, again expanding and offering franchises in other metropolitan-suburban areas. Professional, graduate engineering background required. Little capital needed. Tell age, education, experience in first letter. Strictest confidence. BO-3879, Engineering News-Record.

If there is anything you want
that other readers can supply
OR . . . something you don't want—
that other readers can use—
Advertise it in the
SEARCHLIGHT SECTION

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
Write today without obligation
WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

CONSTRUCTION SUPERVISION
Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.
National Schools of Construction
Est. 1952
Satsuma, Florida

WANTED
Will rent or buy suitable gasoline powered core drill capable of taking cores NX to 200 ft., prefer 3 speed machine.
Call or write:
THALMAN EQUIPMENT CORP.
1933 West Farms Rd. Bronx 60, N. Y.
Tel. DA 3-7400

WANTED
3-Drum Hoists
With or without swingers.
100 H P or larger. Gas, diesel or electric.
GEORGE K. BROWN
11901 Avenue O Chicago 17, Illinois

We have the following used equipment in our lot for immediate sale as follows:

1—Littleford 1200-gallon Asphalt Distributor mounted on frame, for mounting on truck with walker 89, 10-foot spray bar and 2 extra 4-foot spray bars, equipped with 8 cylinder Ford engine and Delco Remy Generator.....$1950.00

1—#879 Barber-Greene Asphalt Finisher, with 10' base width LeRoi water cooled engine, Model 201P7 4-cylinder, with Bosch magneto Delco Remy starter, Zenith carburetor & Delco generator, extra equipment consists of 2 1' screed extensions, 2-cut-off plates, 2-slide plates, 1-18" screed plate extension & 2 Tamper bar extensions $7500.00

1—#879A Asphalt Finisher on 10" crawlers, 10' to 12' width, with 2 1' screed extensions, LeRoi D-201 engine, with Fairbanks Morse magneto, with Delco Remy starter, with Zenith carburetor, with Delco Remy Generator.....$12,000.00

1—10-14 Ton Gallon Tandem Roller with electric lights and electric started powered with Continental 6 cyl. gasoline engine, Spec. #633, with distributor. Marvel Schebler and Delco Generator $5500.00

1—Model LD8A-2203 Scoopmobile, 3½ cu. yd., power steering, mounted on 4 18.00x25 20-ply pneumatic tired wheels, with air brakes, power shift transmission, 4 speeds forward & reverse, 4-8-16-25 miles per hour, with selector for 2 or 4 wheel drive, equipped with Cummins Diesel 175 H.P. engine, model or type JB-1S-600 with Delco Remy 12-volt starter and generator complete with fenders and 4 lights—2 front & 2 rear, used only 1,231 hours.....$20,500.00

1—Kwik-Mix Hi-Lifter Fork Truck, with 22'6", telescoping 3 pc. hydraulically operated mast 48" long forks, mounted on 4 wheel drive tractor, with 4—14.00x24 pneumatic tires, Allison Torquematic Transmission, power brakes and power steering & Continental F244—6 cyc. 75 H.P. Q2200 RPM, water cooled gasoline engine, 12 volt starting & electric system.....$13,318.50

1—500 Gal. Roscoe Maint. Unit mounted on trailer type chassies, on dual pneumatic tired wheels, size 750x20, with spray bar, & 4 cyl. 16HP VE4 Wisc. air cooled engine with clutch reduction, with Fairbanks Morse magneto & Zenith Carburetor $800.00

1—305-1A 15 ton ¾ yd. Crane with type B counterweight, tagline, fairlead, on 132" x 99½" crawlers with 30" shoes, powered with GM Diesel engine Model 371, 3 cyl., with 35' boom, with extra 10' & 15' boom, with clutch throw out boom limit stop, telescopic boom stop, cab bracket & 15 ton single sheave hook block $24,000.00

1—Blaw-Knox Finishing Machine, Model PF90, Serial No. 58-561-6194, 6 cylinder Hercules Engine 71 H.P. Machine is three years old and has had less than 100,000 tons of material processed through it.

For information write, wire, or telephone:

ALLIED CONSTRUCTION EQUIPMENT COMPANY
4015 Forest Park Avenue
St. Louis 8, Missouri
Telephone: FRanklin 1-1818 and 1-7132

FOR SALE or RENT

Model 36 Compton Auger.
P & H 1055 LC High Lift Shovel.
P & H 1055 LC Combination High Lift Shovel with 50' Boom and 36' Stick, or 80' Dragline Boom with fairleads or Lifting Crane.
Late Model Lima 2400 High Lift Shovel.
Two Model 6 NW Shovels with Digging and Coal Dippers.
Other Stripping, Augering and Mining Equipment.

RALEIGH EAGLE COAL CO.
Ameagle, W. Va.

EIMCO
Model 105, Excavator

Complete with Cummins Engine, 1-¾ Yard Rehandling Bucket, 1-½ Cubic Yard Pointed-lip Rock Bucket "A-1" Condition. Price: $16,000.00

J. W. BURRESS, INC.
P. O. Box 4266 Phone: PArk 3-5544
Winston-Salem, North Carolina

FOR SALE

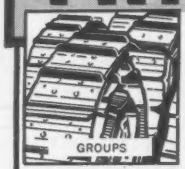
RANSOME 34-E PAVER 16114
JAEGER CONCRETE SPREADER CS-10
JAEGER TRANSVERSE FINISHER 234
KOERING LOGITUDINAL FINISHER LF-1431
BLAW-KNOW SUB-GRADER
10,000 FEET 9" x 9" ROAD FORMS
BACKHOE & LOADER (FERGUSON)
(2) #12 CAT. GRADERS
JERSEY STONE SPREADER
(2) LINCOLN WELDERS 200 AMP & 300 AMP
(3) 1600 GAL. DISTRIBUTORS
T. D. 18-A ANGLE DOZER
T. D. 18-A BULLDOZER
OFFICE TRAILER (INTERNATIONAL)

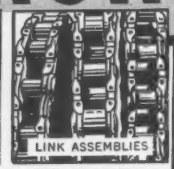
THOMAS NICOL COMPANY
182 HAMILTON ROAD FARMINGDALE, N. J.
PRospect 4-7300

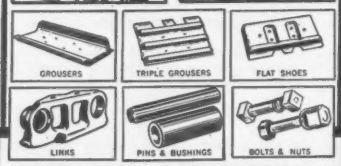
IMMEDIATE DELIVERY FROM STOCK

EVDEL *quality*

TRACK







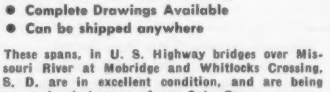
PRECISION MADE BY MASTER CRAFTSMEN for

- "ALLIS-CHALMERS" HD 5/6 • HD 9/11 • HD 15/16 • HD 20/21
- "CATERPILLAR" D2 • D4 • D6 • D7 • D8 • D9
- "INTERNATIONAL" TD 6 • TD 9 • TD 14 • TD 18 • TD 24

... CRAWLER TRACTORS!

EVDEL INDUSTRIES, INC.
1430 BROADWAY • NEW YORK 18, N. Y. • LA 4-0900
CABLES: "EVDELINDUS"

HIGHWAY BRIDGE SPANS
For Immediate Sale



2—300' THRU TRUSS SPANS
9—256' THRU TRUSS SPANS
5— 65' DECK GIRDER SPANS

- 22' Roadway 17'-18' Overhead Clearance
- H 15-S12-44 (AASHO) Loading
- Complete Drawings Available
- Can be shipped anywhere

These spans, in U. S. Highway bridges over Missouri River at Mobridge and Whitlocks Crossing, S. D. are in excellent condition, and are being removed only because of new Oahe Dam.

CUYAHOGA WRECKING CO.
6311 Kinsman Rd., Cleveland 4, Ohio
HEnderson 1-0326

FOR SALE

All necessary equipment for penetration and surface treating business, rollers, distributors, storage tanks, supply tanks, power broom, etc.

Contact

Ajax Petroleum Products Co.
455 Hippodrome Annex Cleveland, Ohio
CHerry 1-4739

EUCLID BOTTOM DUMPS

5—25FDT-58W year 1946 8—70FDT-89W year 1951 & 1953 13 yd. capacity. All very good condition.
Some new tires. Available immediately.
Subject to prior sale or disposition.
L. B. SMITH, INC.
357 W. Fayette St. Syracuse, N. Y.
Phone: GRanite 5-2196

FOR SALE or RENT
6—LeTourneau-Westinghouse Model B Tournapulls
WARRANTY GIVEN
ILLINOIS CONTRACTORS' MACHINERY INC.
Route 83 and Madison, Elmhurst, Illinois
Chicago Phone TUxedo 9-0871
Elmhurst Phone TErrace 4-7100

CAT DW 21s —4 With Scrapers

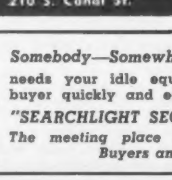
(S/N 69C1707—Scraper S/N 60C1578)
(S/N 69C1054—Scraper S/N 60C941)
(S/N 69C1223—Scraper S/N 60C1102)
(S/N 69C1230—Scraper S/N 60C1118)
"One-Owner" Machines . . . extremely clean; used less than 3000 hours.
PACE-EUCLID, INC.
3001 N. 7th St. Tramcway
Kansas City 15, Kansas Finley 2-8974

CRAWLER CRANE—New 1957

2½ yard Bucket—
Link Belt—K580—Caterpillar Diesel—
90' Boom—LOCATION: FLORIDA
½ PRICE FOR QUICK ACTION
FS-3846, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SURVEYING INSTRUMENTS

USED • REBUILT • SALE
RENT • REPAIRING

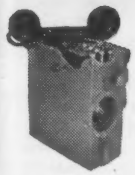


TRANSITS & LEVELS

Various Makes
NEW & REBUILT
Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.
INSTRUMENTS RENTED
Midwest Distibutors for W. & L. E. Gurley and Wild Heerbrugg Instruments

NATIONAL BLUE PRINT CO.
Established 1914
210 S. Canal St. Chicago (6), Ill.

Somebody—Somewhere,
needs your idle equipment! Reach that buyer quickly and economically thru the
"SEARCHLIGHT SECTION"
The meeting place of Used Equipment Buyers and Sellers



U. S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. $35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or $25.00 per mile. Write for free list on telephones. All shipments F.O.B. Simpson, Pa.

TELEPHONE ENGINEERING CO.
Dept. ENR-20 Simpson, Pa.

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

• DROP HAMMERS • DRIVING CAPS • HOISTS AND BOILERS
• STEEL LEADS • PILE DRIVER HOSE • STEEL SHEET PILING

CONMACO, INC.
DRexel 1-3930
820A KANSAS AVE.,
KANSAS CITY, KANS.

PIPE

Surplus New & Used

FOR SALE, WANTED OR RENT

Call: HYACINTH 7-4900

PIPE, VALVES & FITTINGS
PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE

ALBERT PIPE SUPPLY CO., Inc.
103 VARICK AVE., BROOKLYN 37, N.Y.

FOR SALE—CRANE/SHOVEL

Lima Model 1201, 3½ yd., S/N 5257, in good condition.

Includes: High-lift shovel on 42' boom, 32' handle in excellent condition—may be bought separately. Cummins—Model L Diesel in excellent condition, S/N 71086. Walk-around platform. Air Controls. 85' boom in new condition.

Immediate delivery. Financing if desired on entire rig; or on crawler w/crane boom, less shovel front.

Price, f.o.b. railroad tracks in northern Virginia $30,000.00

LUTHERVILLE SUPPLY & EQUIPMENT CO.
Front and Lincoln Ave., Lutherville, Maryland

FOR SALE

1—Used Lima Model 1201, New Cummins Engine and Undercarriage Rebuilt in 1958
1—Used Garwood Buckeye Trencher Model 407. New in 1958
1—Used Manitowoc 3900
1—Used Manitowoc 3500

MANITOWOC-FORSYTHE CORPORATION
37-11 Vernon Blvd.—EXeter 2-6125
Long Island City 1, New York

STEEL PIPE up to 48" O.D.

WELDING FITTINGS
FLANGES • VALVES

The IDEAL SUPPLY CO.
445 Communipaw Ave.
Jersey City, N. J., DElaware 3-2600
New York Phone: Digby 9-2454

FOR SALE or RENT
5—LeTourneau-Westinghouse Model C Tournapulls
WARRANTY GIVEN
ILLINOIS CONTRACTORS' MACHINERY INC.
Route 83 and Madison Elmhurst, Illinois
Chicago Phone: TUexedo 9-0871
Elmhurst Phone: TErrace 4-7100

EUCLID SCRAPERS

S-7, S-12, S-18, SS-18
Also 6 wheel, 15½ yd. 8TDT and 14TDT Scrapers. All excellent condition—some new tires.

Subject to prior sale or disposition.

L. B. SMITH, INC.
357 W. Fayette St. Syracuse, N. Y.
Phone: GR 5-2196

ASSOCIATED PIPE & FITTING CO., INC.

PILING PIPE SHELLS MANDREL FITTINGS	"H" BEARING PILE SLEEVES AND SHOES	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

262 RUTHERFORD BLVD., CLIFTON, N.J. • PR 3-8400

DERRICKS, STEEL GUY

90' mast, 75' boom, 70' mast, 60' boom, excellent.

VETTER STONE
Kasota, Minn. Phone Mankato 6778

DAVIDSON

PIPE SUPPLY CO. INC.
Seamless and Welded Steel Pipe
Fittings, Valves, Pipe Fabricating
Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

PILING

SURPLUS NEW and USED **For Sale, Wanted or Rent**

PIPE

2,000,000 ft. 2"	3.50#	to the foot
1,000,000 ft. 3"	7.70#	
1,000,000 ft. 4"	10.98#	
500,000 ft. 6"	19.80#	
200,000 ft. 8⅝"	28#	
400,000 ft. 10¾"	35#	
75,000 ft. 12¾"	40#	
10,000 ft. 16"	42#	

All No. 1 Grade Plain End and Cleaned
INDIANA-OHIO PIPE CO.
P. O. Box 5412 Shepard Station, Tel: CL-3-5527
COLUMBUS 19, OHIO

H & SHEET STEEL PILING

3700 PCS. BETH. SP6A, 50' 56' & 48' & 40' & 35'
1900 PCS. MPI12—12', 25', 35', 40', & 60'
850 PCS. BETH.—AP3 20', 25', 30', 35', & 60'
790 PCS. BETH.—DP2—31', 35', 40', 50', 60'
1200 PCS. ZP38-ZP32—25', 36', 50', 60' & 65'
1400 PCS. BP8, BP10, BP12—BP 14—55' to 60'
600 PCS. BETH. ZP27—25', 30', 50' & 60'

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
TORONTO—BALTIMORE—JACKSONVILLE
CLEVELAND—RICHMOND—NEW ORLEANS

DIESEL LOCOMOTIVES & CRANES
12—Gen. Elec. 100, 80, 65, 45, 25 & 23 ton
25 Ton New Whitcomb Diesel Elec.
25 Ton Industrial Loco Crane, 60' Boom

20 TON STIFF LEG DERRICK
1—AH&D, 40' Mast, 96' Boom, 16' BW

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephones MU 2-3075 or MU 2-1898

We do a Nation-wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT
815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
103 pcs. 60 ft. MZ-27—Tennessee
150 pcs. 60 ft. SP-4—W. Virginia
290 pcs. 60 to 30 ft. M-16 & M-115—Tennessee
370 pcs. 60 to 30 ft. M-115 & M-116—Indiana
150 pcs. 34-30 ft. M-116—Michigan
81 pcs. 25 ft. M-115—Mississippi
220 pcs. 15 ft. M-115—Missouri
Other lengths and sections at various locations.
Storage yards at CHICAGO, BUFFALO & MEMPHIS.
Also 10" x 42# and 12" x 53# BP 60' in stock.

PILE DRIVING EQUIPMENT
VULCAN AND McKIERNAN-TERRY PILE HAMMERS & EXTRACTORS
All Sizes—For Rent & Sale—Immediate Shipment

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

RAILS-TIES

TRACK ACCESSORIES

RAILS
MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W. VA.

PILING IN SOUTH

200 pcs. 10 in. 42 lb. 12 in. 53 lb. 60' BP
900 pcs. M115, M116, DP2, 12' to 60'
E4 Extractor 9 B3 Hammer
Stocks Jax—Miami—New Orleans—Tampa

THE SEABOARD STEEL CORP.
Tel. Ringling 7-0461 P. O. Box 5071 Sarasota, Fla.

PROFESSIONAL SERVICES

MIDDLE ATLANTIC

J. E. Greiner Company

Consulting Engineers

Airports - Bridges -
Buildings
Highways & Expressways -
Port Facilities

1106 N. Charles St., Baltimore 1, Md.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations, Express Highways
Administrative Services
Kansas City - Cleveland - New York

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

Lawrence S. Waterbury

Consulting Engineer

Bowling Green 9-9298
26 Broadway New York 4

Steinman, Boynton, Gronquist & London

Consulting Engineers

HIGHWAYS - BRIDGES -
STRUCTURES

117 Liberty St., New York 6, N. Y.

Severud-Elstad-Krueger-Associates

Consulting Engineers
Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Ave., New York 17, N.Y.

Lockwood, Kessler & Bartlett, Inc.

Engineers *Surveyors*
Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way Syosset, N. Y.

Modjeski and Masters

Consulting Engineers

Bridges and other Structures
Foundations
Highway and Expressways
900 North Sixth St. Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Robert W. Lowry, Inc.

Consulting Engineers
Investigations, Reports, Supervision, Airports, Highways, Expressways, Bridges, Structures, Prestressed Design Strengthening, Soil Engineering
Sewerage & Water Systems, Principal Offices
227 Pine Street, Harrisburg, Penna.

The Kuljian Corporation

Engineers • Constructors

WE DESIGN AND CONSTRUCT

Power Plants • Public Works • Processing Plants • Oil Refineries • Chemical Plants • Textile Plants • Airport Facilities • Military Installation

1200 N. Broad St., Philadelphia 21, Pa.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.; Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Buchart Engineering Corp.

Consulting Engineers
Highways - Bridges - Sewer Systems
Surveys - Water Works - Dams - Reports
Supervision - Industrial - Municipal Structures
55 S. Richland Ave., York, Pa.
Lancaster, Pa. Washington, D. C.

SOUTH

Rader and Associates

Engineers - Architects
Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.
First Nat'l Bank Bldg., Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates

Consulting Engineers

Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highway and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.

360 East Grand Ave. Chicago 11, Ill.

Roy B. Everson

S.E. Consultant Since 1900

For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems.
A New System for Automatic Control
211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3339

Sargent & Lundy

ENGINEERS
Consultants to the Power Industry
Studies • Design • Supervision
140 South Dearborn Street,
Chicago 3, Ill.

Toledo Testing Laboratory

Engineers—Chemists
Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory
1810 North 12th St. Toledo 2, Ohio

AERIAL SURVEYS

Aerial Map Service Co.

Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction. City Maps, Tax Maps. Photo Geology, Tellurometer Radio Distance Measurements. Triangulation. Electronic Computation.
1016 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.

AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile Inventories
907 Penn Ave. Pittsburgh 22, Pa.
A NATIONWIDE SERVICE

Clyde E. Williams & Assoc., Inc.

Aerial Photos - Enlargements
Topographic Maps
At large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
312 W. Colfax Ave. South Bend, Ind.

FOREIGN

underpinning and foundation co. of puerto rico

Pile driving, caissons, underpinning, all types of foundations, industrial and commercial construction, sewers and sewage disposal.
800 LABRA AVE. SANTURCE, P.R.
PHONE: 3-1040

THIS SECTION
is available to consulting engineers to contact prospective clients every week or every other week.

Now—ONE comprehensive book
covers every major phase of
building design and construction

Here at last is that one volume you need to see you through any project connected with building design and construction. Every decision can be made with economy and dispatch with this Handbook at your side. For the supplier, engineer, owner, architect, or contractor, here is the master key to building problems!

BUILDING CONSTRUCTION HANDBOOK

Prepared by a Staff of Specialists

FREDERICK S. MERRITT
Editor-in-Chief
Senior Editor,
Engineering News-Record

851 pages, 6 x 9, 183 tables, 428 illustrations, $15.00

EASY TERMS Pay $5.00 in 10 days, then $5.00 monthly

FREE EXAMINATION COUPON

McGRAW-HILL BOOK Co., Dept. ENR 2/11
327 W. 41 St., New York 36, N. Y.

Send me Merritt's Building Construction Handbook for 10 days' examination on approval. In 10 days I will (check one) ☐remit $15.00 plus few cents delivery costs; or ☐ $5.00 in 10 days and $5.00 a month until $15.00 is paid. Otherwise, I will return book postpaid. (We pay delivery costs if you remit with order; same examination and return privilege.)

PRINT
Name .....
Address .....
City ..... Zone..... State.....
Company ..... Position .....
For price and terms outside U.S.,

ENR-2/25

CLASSIFIED ADVERTISING INDEX

Albert Pipe Supply Company..... 81
Allied Construction Equipment Co.... 80
Ajax Petroleum Products Co..... 80
Associated Pipe & Fitting Company.. 81
Brown, Geo. K..... 79
Burress, Inc. J. W. 80
Conmaco, Inc. 81
Cuyahoga Wrecking Co..... 80
Davidson Pipe Supply Co. Inc..... 81
Evdel Industries 80
Federal Electric Corporation..... 78
Granite City Steel Company..... 78
Ideal Supply Company..... 81
Illinois Contractors Machinery Inc..80-81
Indiana-Ohio Pipe Company..... 81
Lutherville Supply & Equipment Co.. 81
Manitowoc-Forsythe Corporation..... 81
Midwest Steel Corporation..... 81
Missman, Stanley, Farmer & Assoc.. 78
Mississippi Valley Equipment Co.... 81
National Blue Print Company..... 80
National Schools of Construction..... 79
Nichol Co. Thomas..... 80
Pace-Euclid Inc. 80
Raleigh Eagle Coal Co..... 80
Smith Inc. L. B. 80-81
Stanhope Inc. R. C. 81
Sverdrup & Parcel Engineering Company 78
Telephone Engineering Company..... 81
Tennessee Valley Authority..... 78
Thalman Equipment Corp..... 79
Vetter Stone Company..... 81
Wilson Engineering Company..... 79

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc.....83
Allis-Chalmers 1
Aluminum Company of America.....42-44
America Fore Loyalty Group.....67
American Foreign Insurance Association..54
Armco Drainage & Metal Products, Inc.....2nd Cov.
Automotive & Aircraft Div., American Chain & Cable Company, Inc..59

Behlen Manufacturing Co.....48
Bethlehem Steel Co.....11
Borden Metal Products Co.....20
Broderick & Bascom Rope Co.....4th Cov.

Cleveland Tramrail Div., Cleveland Crane & Engineering Co.....4
The Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div.....36-37
Concrete Reinforcing Steel Institute.....52

Deming Co., The.....83

Eimco Corporation, The.....3rd Cov.
Elgood Equipment Corp.....58
Euclid Div., General Motors Corp.....8, 9, 55

Flintkote Company, The.....34
Foster Co., L. B. 18

Hendrix Mfg. Co., Inc.....52
Homelite Div., Textron Inc.....41
Hyster Company 15

Irving Subway Grating Co., Inc.....64-65

Johns-Manville Corp. 12-13, 63

Kern Instruments Inc.....47
Kinnear Mfg. Co., The.....66

LeRoi Div., Westinghouse Air Brake Co..7
Lock Joint Pipe Co.....16

Marlow Pumps 33
McGraw-Hill Book Co., Inc.....72

Nassau Trailer & Motor Sales.....66
Northern Gravel Company.....6

Pacific Crane & Rigging Co.....34
Phoenix Bridge Company.....66
Precision Instruments Inc.....53
Presstite Division, American-Marietta Co. 29

Ramset Fastening System.....14
Richmond Screw Anchor Co., Inc.....2
John A. Roebling's Sons Corp.....51
Rust-Oleum Corporation 3

Servicised Products Corp.....32
Spencer, White & Prentis, Inc.....58
John W. Stang Corp.....53
Stow Manufacturing Co.....35

U. S. Rubber Co., Tire Div.....46
U. S. Steel Corp. 56-57

Wild Heerbrugg Instruments, Inc.....10

Yeomans Brothers Co. 50
Yuba Consolidated Industries, Inc.....5

Professional Services 82

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

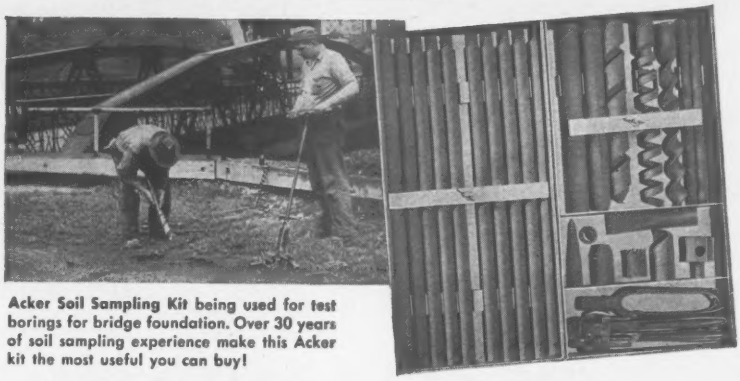
Employment Opportunities 77-79
Notices
Proposals 74-76
Equipment
(Used or Surplus)
(For Rent, Sales Wanted).....79-81

DON'T GUESS!

use an ACKER SOIL SAMPLING KIT for accurate sub-surface information

With accurate sub-soil information, you avoid costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

Write today for prices and Bulletin 26ENR.



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue Scranton, Penna.

a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment.

DEMING DEMERSIBLE SEWAGE PUMPS

HEAVY-DUTY, NON-CLOGGING

Compact . . . pump and motor are one unit. Motor, totally submerged, perfectly sealed to exclude moisture. Wide range of sizes and capacities.

Just one of the many Deming pump features that provide longer life and lower operating costs

Ask for a recommendation on your next project.

The DEMING Co.

404 BROADWAY • SALEM, OHIO

Urban Expressways and BPR

NEW STANDARDS established by the Bureau of Public Roads to guide amended cost estimates for the Interstate System (ENR Feb. 11, p. 21) have raised the blood pressure of urban officials, planners and engineers across the country. Causing the greatest reaction are new criteria relating to spacing of interchanges and number of lanes on urban expressways. It is doubtful if such great concern is justified.

Average distance between interchanges in urban areas is to be not less than two miles; in suburban areas, not less than four miles. Minimum distance between interchanges in urban areas remains at one mile, same as in 1958.

Number of lanes is tied into 1960 population estimates: No more than four lanes for cities up to 400,000 population; no more than six lanes for 400,000 to 1 million; and no more than eight lanes for more than 1 million.

Some highway departments with urban projects planned, designed or under construction are upset by implications of the new standards. They feel—and justifiably so—that arbitrary imposition of fixed standards such as these will hurt them tremendously.

Obviously, however, such standards cannot be applied indiscriminately to all cases—and we don't believe that BPR intends to do so. BPR engineers know, for instance, that a downtown expressway planned as a distributor of traffic to arterial streets can not fulfill its function with interchanges a mile apart.

Overlooked by some people is the fact that provision is made for deviations from the established standards. The door is open—as it has always been—for discussion, justification and approval of projects tailored to fit an individual city's needs.

So there is no reason to push the panic button. Likelihood is that the cities will get what they need in the way of interchanges and lanes. The only requirement is that plans must be justified by engineering and economic facts.

Beaten to the Draw

FOREIGN STEEL HAS WON OUT on a big bridge (see p. 22). It is an unpleasant fact to ponder.

Three of the nine contractors bidding on the superstructure of the new bridge across the Panama Canal submitted a price based on the use of foreign steel. When the bids were drawn, five of the six planning to use domestic steel were beaten on the steel item by all three contractors planning to use foreign steel. Only one contractor basing his bid on domestic steel was in the running, and he could not equal the lowest foreign bid even after the latter was increased by about 10% in accordance with the rules of the competition.

It may also be significant that the contractor who was low with foreign steel also submitted a bid using domestic steel. It was 23% higher.

What is wrong? Simply stated of course, the cost of making and fabricating structural steel in the U.S. is too high to permit domestic steel to compete successfully with foreign steel on this job. Already a big slice of the domestic market in such steel products as nails, reinforcing bars, fencing and wire rope is going to foreign bidders. Now it appears that heavy structural shapes may join the parade.

Two solutions can be tried: more governmental protection or greater productivity. Protection might save the domestic market, but only greater productivity will save the foreign business, and the jobs that depend on it. It is to be hoped that the Panama Canal bridge case will awaken labor leaders to the need for cooperation in getting this greater productivity.

Automation in Batching

A QUIET REVOLUTION has taken place in the batching of ingredients for concrete and asphaltic paving mixtures. Changes are most marked in ready-mix concrete and semi-portable asphalt plants.

From a laborious manual process, which all too often resulted in mixtures of variable quality, batching has grown to be highly automatic, with almost infallible control over ingredient proportions. Modern plants will automatically select, batch and mix the proper proportions of as many as ten liquid, solid, powdered or granulated materials. Mixture formulas most often required in a plant can be pre-set for highly repetitive operation. When a different formula is to be used, ingredients can be quickly and easily batched manually.

Cycles overlap and interlock for high production and protection against error. Batching is controlled electrically or electronically, by means of control panels, "black boxes," punch cards or tape.

A complete record can also be kept of the ingredients that go into every batch, where this is required. Auxiliary devices can prepare job tickets, punch cards for accounting purposes, and so on.

Specifically on concrete plants, sensing devices provide accurate moisture content readings at any time. From them, batch weights can be corrected for moisture. For a price, water and fine aggregate weights can be adjusted automatically and continuously for variations in moisture content.

Under development also are highly automatic portable plants for asphalt paving. Major breakthroughs in automating this type of plant can be expected this year.

Now that automation is so far advanced at the batcher, the paver should logically sprout some push-buttons and even remote control mechanisms. It is not wholly dream stuff to suppose that there may soon be pavers that will do their jobs without operators at the helm.

domestic

ne cost of
e U.S. is
e success-
a big slice
s as nails,
going to
structural

ental pro-
ight save
tivity will
epend on
ridge case
operation

tching of
mixtures.
crete and

too often
ching has
infallible
plants will
er propor-
or granu-
required
operation.
lients can

ction and
lled elec-
ol panels,

ngredients
d. Auxil-
cards for

vices pro-
any time
moisture
s can be
riations in

atic port
roughs in
this year
e batcher
ttons and
ot wholly
be paver
e helm.

VS-RECOR